THE PRACTICE, POLITICS AND ECOLOGY OF NON TIMBER FOREST PRODUCTS IN SCOTLAND

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Non timber forest products are the neglected resource of Scotland's woodlands, used by many, but with little provision in law, policy or management. Drawing on new research conducted in Scotland, and comparative studies in Finland, the Pacific Northwest USA and Canada, this thesis examines issues relating to the practice, politics and ecology of NTFPs. In doing so it uncovers and appraises the current state of NTFP use in Scotland.

The methodological approaches used in the field research are set out in Chapter One, which also details the employment of theories of political ecology and access in the subsequent analysis. Chapters Two to Five explore the perspectives of stakeholder groups, who either use NTFPs directly or who influence the availability of resources and the ability of others to access them. The first of these groups is harvesters, with Chapter Two examining how issues of legal pluralism or the coexistence of both legal and customary rights for harvesting has resulted in the dominance of common practice over management and policy. Chapter Three discusses buying and processing activity, focussing on its contribution to both livelihood and lifestyle and its position 'somewhere in between' commercial and non-commercial benefit. The influence of land managers is examined in Chapter Four, reviewing the contrast between the privileged knowledge that enables harvesters to use resources, and the reliance on professionalised knowledge that renders land managers comparatively powerless. In Chapter Five the influence of organisations is explored, particularly in relation to the difficulty of accommodating the interests of such disparate groups without formal channels for representation.

Through out these chapters, evidence is presented of how domestically produced NTFPs are used in Scotland and the social, cultural and ecological factors that determine and delimit NTFP involvement and harvesting. The thesis concludes by addressing policy and management concerns, both practical and ideological, and considering mechanisms for the management of NTFPs as a resource. It demands that ethical questions over benefits, values and rights be

addressed, as well as issues surrounding sustainability and resource use. In pulling together the narratives of the different groups, the conclusion seeks to present a new system for the self-governance of NTFP resources by the stakeholders themselves.

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INTRODUCTION

SECTION 1: INTRODUCING NON TIMBER FOREST PRODUCTS

Non timber forest products in Scotland

Non timber forest products (NTFPs) have been used as long as there have been people living in or near forests. In the present day some of the most commonly used NTFPs are food products, such as berries (brambles, blaeberries, rowanberries), herbs (wood sorrel, sweet cicely, nettles) and mushrooms (chanterelle, cep, hedgehog fungus). NTFPs are also used for decorative purposes – particularly holly, ivy and conifers as Christmas decorations – moss and bulbs for horticultural purposes and young growth of various tree species for basket making. Among those who use NTFPs most extensively, products are used for almost all aspects of household management and maintenance.[1] However, although NTFPs have remained continuously important to the livelihoods of forest people, the level of importance that has been attached to them outside forest communities, and the level of policy attention that they have received, has varied considerably. In the last twenty years in particular there have been major shifts in the importance accorded to NTFPs, and in the ways in which they are perceived.

Research indicates that traditions of using wild plants survived longer in Scotland than elsewhere in the UK and that much of that use is documented. Within this continuity of use, Darwin (1996) identifies a significant cultural gap in use following the Second World War, when social and economic changes led to the decline of centuries old traditions. In recent years, however, there is increasing evidence of interest in gathering NTFPs for personal use, as evidenced by the recent publication of harvesting guides and of 'lifestyle' articles in the press[2] and the increasing use of (and prominence in labelling) of wild products in restaurants and specialist shops.

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[1] NTFPs listed here are clearly far from exhaustive. The functional uses of NTFPs are discussed in more detail in Chapter Two.

[2] A search for press articles using the terms 'wild' and 'harvest' (and therefore by no means complete) in 2005 turned up 64 directly relevant articles either on harvesting or using wild harvested products, mainly foods. Many of these articles were published in the autumn and featured wild fungi.

NTFPs have been studied a great deal overseas, with the focus on using them as a means of maintaining both an economic function for forests and ecological integrity (Thadani, 2001). Internationally, this position has shifted subtly, with the emphasis moving from conservation of habitats through sustainable use, to providing opportunities for poverty eradication through economic development and the preservation of resources as a means to this end. In contrast to the attention overseas, NTFPs have been largely neglected in the UK in the contexts of policy and management. In response to this neglect, this thesis sets out to explore the role of this hidden harvest in our economy and in the cultural lives of our people. It is not just in the tropics and developing world that locally sourced wild materials play an important role in daily lives.

Recent publications documenting the Scottish use of NTFPs include Flora Celtica (Milliken and Bridgewater, 2001), which details modern usage of wild harvested plant products, and the Wild Harvests study (Emery et al., 2006), which explores the importance of NTFPs in the livelihoods of gathers in two case study areas. Additionally, two recent quantitative surveys have included a question about NTFP harvesting, both suggesting that around 25% of the Scottish population have, on some level, harvesting some kind of NTFP in recent years (Snowley and Daly, 2005; TNS Global, 2003). Emerging from research published during the writing of this thesis, this figure of 25% is returned to in many of the chapters. In doing so it is being consciously employed as a startling, provocative figure, something that causes us to adjust our thinking about NTFP harvesting as a marginal activity or something that has been lost from our culture, and ensure that we sharpen our thinking about NTFP policy and practice.

NTFP definitions

Non timber forest products, non wood forest products,[3] special forest products, minor forest products – all are clumsy and artificial names for things harvested from woodlands in addition to timber, and all define them as 'other'. This seems

[3] FAO uses the acronym NWFP (non wood forest product) which is defined as 'products of biological origin other than wood, derived from forests, other wooded land and trees outside forests' (FAO, Undated) and does not include any wood products at all (for instance small branches used decoratively or as fencing material or firewood). This definition therefore does not have universal acceptance or applicability (Belcher, 2003).

a negative starting point as it suggests that NTFPs are viewed as difficult or requiring special treatment. However, this does correspond with the motivation for grouping together things that are harvested from woodlands in addition to timber: they *are* generally neglected in policy and management and therefore *do* require special treatment.

In Scotland NTFP is a term that is rarely used outside the fields of research and policy. To those who harvest and use non-timber products the term is fairly meaningless. I use de Beer and McDermott's (1996 p 24) definition, 'NTFPs encompass all biological materials, other than timber, which are extracted from forests for human use' but also reflect the practice of participants in this study by having somewhat fuzzy boundaries in terms of what is 'non timber' and what is 'timber' and what is and what is not a 'woodland' product. Those who use non timber products may also use wild harvested products from outside forested landscapes. Separation of harvesting into timber/non timber and forest/non forest dichotomies is therefore difficult to equate with practice. To these harvesters the distinction between timber and non timber products is not useful, and this thesis follows their practice in distinguishing more between those products that are harvested as a part of the informal economy and those that are harvested formally. Perhaps the best thing that can be said for the term, NTFP, is that it is broad, inclusive and that internationally those in the forestry world know roughly what it is that is being referred to, with some cultural modifications.

However, common factors do exist, the harvest of NTFPs taking place outside the formal harvest of timber, involving different groups of people and different practices, and requiring different policy and mechanisms for management, and it is these common factors that lead me to use the term NTFP. This thesis aims to illustrate that though the range of products that is harvested is very broad, there are also common factors relating to the way in which harvesters are able to access these products and in the position that these possess in terms of

livelihood and lifestyle.[4] These common factors largely relate to the fact that these products are treated as other, difficult or requiring special treatment. Therefore, in the context of this study, the term NTFP is paradoxically appropriate.

Part of a theme that will develop throughout this thesis, this discussion illustrates the importance of defining NTFPs in the context of harvesting activity – informally carried out for an overlapping spectrum of non-commercial and commercial purposes, in addition to the functional uses of the products. This study therefore takes the context of harvesting as its starting point, reflected in the research questions outlined in the following section and the focus of the thesis as a whole on the practice, politics and ecology of NTFPs.

SECTION 2: THE PRACTICE, POLITICS AND ECOLOGY OF NTFPs IN SCOTLAND

What the definition of NTFPs given above does not indicate is *how* the products are used: either in terms of their functional purpose, their role in livelihood provision or their contribution to lifestyle. As would be expected, there is great variety in all these things. Both in Scotland, and elsewhere, the harvest of NTFPs, occurring outside the formal harvest of timber and generally involving a different set of people to either the harvest of timber or the management of forests, has elements of both commercial and non-commercial activity. For example, the overlap between the cultural and livelihood values associated with NTFP harvesting has been documented with regard to the harvest of ferns and huckleberries in the US, where both are described as 'somewhere between', harvested neither wholly for commercial or cultural purposes (Anderson et al., 2000; Carroll et al., 2003). This 'somewhere between' quality will emerge as a key theme in this thesis.

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[4] In order to narrow down the enormous range of products and harvesting activity that could be discussed in this thesis, I have chosen to concentrate on the harvest of NTFPs of vegetable origin. This is for the reason that the harvest of animal based products tends to be with the close involvement of land managers, which is not present in the harvest of plant based products. The justification for this separation is also present in my focussing on those products that are harvested informally, as opposed to those that are harvested alongside the formal harvest of timber.

This overlap in cultural and livelihood values leads to the use of 'livelihood' as a term interpreted in its broadest sense, according to Polanyi's (1977) definition of contribution to physical or cultural survival. This thesis therefore considers both commercial and non-commercial contexts, and as others (such as Anderson et al., 2000; Carroll et al., 2003; Hinricks, 1998) also point out, all things in between. In concentrating on socio economic dimensions of NTFP use, such as the characteristics of the user groups and the processes and mechanisms of access through which their use is delimited, this study reviews *how* NTFPs are used, *who* uses them, and what social, political and ecological factors influence these two things. To this end, the study presents from the outset the following four research questions:

1) How are domestically produced NTFPs used? What are the variables in the nature and extent of usage at different stages?
2) What social, cultural and ecological factors are perceived as delimiting use?
3) Given the current system of ad hoc (or unregulated) use, is more active management of NTFP resources needed? What benefits could this provide (and to whom) beyond the scope of the current system?
4) What form should the management of these resources take?

These four questions will be developed in each of the chapters and returned to in summary in the conclusion.

SECTION 3: STRUCTURE AND REFLECTIONS.

This thesis has a practical basis, having been carried out in cooperation with Reforesting Scotland, a non-governmental organisation dedicated to social forestry and with an interest in promoting involvement in forestry, ecological restoration and forest culture. In accordance with its aims, Reforesting Scotland seeks to involve a greater number and variety of people in forestry through diversification of forestry activities and the rehabilitation of woodlands as a provider of livelihoods. The promotion of NTFPs by NGOs such as Reforesting Scotland (as well as government agencies) is the backdrop against which the research is set. Consequently the impact of this encouragement of new activity on existing patterns of use is a constant underlying question in the analysis.

While the study draws primarily on research conducted in Scotland, where comparisons are useful reference is also made to research conducted in Finland and the Pacific Northwest USA and Canada. These two areas differ from Scotland greatly in terms of the availability of resources, both having significantly higher percentage cover of forest, this, together with other factors leads to cultural modifications to the definition of the term NTFP and to the nature and extent of usage, these modifications are discussed in detail in Chapter One. Demand on resources varies considerably, with varying population density and history of use. In consequence, the way in which NTFPs are regarded either as common or private property, and the complexity of regulation is also highly variable. This has considerable influence on the profile that these resources and the attention that they receive. It is perhaps Scotland's interrupted history of use, and NTFPs' consequent status as hidden resources, which leads to the current system of virtually unregulated ad hoc use. Again, these are themes that are developed in the course of the thesis.

Study content

The study is structured through reviews of a series of stakeholder groups – harvesters, processors and buyers, land managers and government and support organisations – who either use NTFPs directly or who influence the availability of resources and the ability of others to access them. To some extent these stakeholder groups are overlapping, and therefore issues raised re-occur in the discussion. One additional group that is certainly all encompassing is consumers, and these are therefore addressed through the other groups.

The methodological approaches used in the field research are set out in Chapter One, together with introductions to each of the series of studies undertaken. Further details of these studies are presented as appendices, which are referred to throughout the text. This chapter also develops the argument for the theoretical approaches taken to the subsequent analysis of these studies – particularly in terms of political ecology, and theories of access.

The main body of this study (Chapters Two to Five) is structured as a series of chapters on stakeholder groups. Each of these chapters is divided into two

sections, the first providing a description and analysis of the activities of that group, the second an analysis of the factors delimiting the involvement of that group drawing on Ribot and Peluso's (2003) theory of access.

The first of stakeholder groups discussed is harvesters. Chapter Two develops a typology for harvesting and use activity, and argues that the way in which these are categorised has a considerable impact on the attention that the resource and activity receives in policy and management – and the corresponding influence that the people who use them have on policy and management. The chapter also examines how issues of legal pluralism (or the coexistence of both legal and customary rights for harvesting) have resulted in the dominance of common practice over management and policy, leading to a position of a 'customary commons'.

Chapter Three discusses buying and processing activity, focussing on its contribution to both livelihood and lifestyle and its position 'somewhere between' commercial and non-commercial benefit. This chapter also examines the poor fit of this informal economic activity with systems of regulation, both in terms of access to resources and regulation of businesses

The influence of land managers is examined in Chapter Four, reviewing the contrast between the privileged knowledge that enables harvesters to use resources, and the reliance on professionalised knowledge that renders land managers comparatively powerless. This chapter makes the distinction between the allocative rights governing who is able to *access* resources and the authoritative rights governing who is able to *influence* the management of the resources themselves. The chapter argues that customary rights are truncated by this separation and that this limits our ability to ensure that NTFP resources are managed to ensure the sustainability of any impacts of either harvesting activity or woodland management.

In Chapter Five the influence of governmental and non-governmental organisations is explored, particularly in relation to the difficulty of accommodating the interests of such disparate groups without formal channels for representation. The development of policy and its implementation at a

Scottish level is traced from International and European level agreements. In doing so, the chapter reveals institutional dissonance in the way in which policy is transferred to practice, and the way in which practice is able to influence mechanisms for management is uncovered.

Through out these chapters, evidence is presented of how domestically produced NTFPs are used in Scotland and the social, cultural and ecological factors that determine and delimit NTFP involvement and harvesting. The thesis concludes by addressing policy and management concerns, both practical and ideological, and considers mechanisms for the management of NTFPs as a resource. It demands that ethical questions over benefits, values and rights be addressed, as well as issues surrounding sustainability and resource use. In pulling together the narratives of the different groups, the conclusion seeks to present a new system for the self-governance of NTFP resources by the stakeholders themselves.

CHAPTER 1: METHODOLOGY AND METHODS

SECTION 1: METHODOLOGY

In contrast to the study of NTFPs in tropical, Scandinavian and North American areas NTFP research in Scotland is at a very early stage of development. Although there have been some socio-economic studies on some product areas such as the wild mushroom industry (Dyke and Newton, 1999) and natural dyes (MacIntyre, 1999); and studies documenting the use of wild plants (Milliken and Bridgewater, 2001, 2004; Murray and Simcox, 2003; Sanderson and Prendergast, 2002), generally, there is very little understanding of local issues or data to build on and issues around the use of NTFPs are not clearly defined. Consequently, in this thesis it is first necessary to take a step back in order to look broadly at NTFP use both for commercial and other purposes. To establish a framework for understanding, this study seeks to build on the experience of comparable studies, using a qualitative approach to identify the scope of factors involved in utilisation and to assess their relative importance. This will enable the identification and analysis of the groups involved in the use of NTFPs in Scotland and comparable countries, and the factors in the use of NTFPs.

This chapter establishes how key research questions will be addressed in this thesis, compares the disciplinary approaches taken by other studies on the utilisation of NTFPs, explores how these disciplinary approaches can be applied to analysis and explains the research strategy taken. The second section of this chapter describes the research methods used in each element of the thesis, and finally there is a discussion of ethics related to this thesis.

Research approaches and strategy

In the previous chapter I identified four broad research questions:

1) How are domestically produced NTFPs used? What are the variables in the nature and extent of usage at different stages?
2) What social, cultural and ecological factors are perceived as delimiting use?

3) Given the current system of ad hoc (or unregulated) use, is more active management of NTFP resources needed? What benefits could this provide (and to whom) beyond the scope of the current system?
4) What form should the management of these resources take?

The first two of these questions seek to analyse usage, while questions three and four analyse the impacts of policy and management on NTFPs, and how they can be managed equitably and efficiently. While there have not been studies with directly comparable aims elsewhere some social studies do provide methodological background. In order to address these questions, this section reviews the methodological and disciplinary approaches taken to the study of usage and policy analysis elsewhere.

The literature on utilisation of NTFPs can be divided roughly into three branches focussing on: subsistence use, commercialised products and the process of commercialisation. These three branches of the literature tend to have one of two distinct aims, either the academic documentation of knowledge, or more applied analysis, relating to particular aspects of commercial development in order to better achieve policy objectives.

Literature on subsistence use often aims to document use under the discipline of ethnobotany. The documentation of use may be designed to record and preserve traditional ecological knowledge (Dubois; Prance, 1984; Sanderson and Prendergast, 2002; Turner et al., 2000) or to describe and understand the importance of particular functions of harvested products, such as contributions to food security, provision of specific nutrients or medicinal uses (Givetti and Ogle, 2000; Ogle et al., 2003). This research generally focuses on indigenous populations in tropical areas, where the harvesters' way of life may be perceived as being under threat of change. Occasionally economic botany studies document use to investigate possibilities for commercialisation (McCutcheon et

al., 1992; McCutcheon et al., 1997; Milliken and Bridgewater, 2001; Turner and Cocksedge, 2001; Wong and Dickinson, 2003).[5]

The focus on the commercialisation of NTFP harvests began with early attempts to value NTFP resources. Peters et al (1989) conducted an economic valuation of the Amazonian rainforest that concluded that NTFP resources were more economically valuable than timber. Other valuations followed, such as those by Godoy et al(1993) and Grimes et al (1994). In early valuations objective values acquired in non-monetary transactions were translated to monetary value, and consequently these valuations were much higher in monetary terms than the actual available income generated by harvesting. Tewari (2000) made an important distinction between valuations of stock and valuations of flows of income. Many early valuations were of the stock – or potential yield, indicating development potential, rather than at current rates of extraction. The high values given to NTFP stocks in these early researches gave a great deal of optimism for NTFPs to be a trigger for development and to provide tropical forests with protection from destructive logging by giving alternative economic value.

However, the marked difference between actual incomes from NTFP resources and the value of NTFP stocks drew the attention of researchers and led Grimes et al to observe that demand for these products may be confined to the local area, rather than wider markets. Godoy et al made the further observation that issues such as land tenure were significant in the use and commercialisation of products.

As a result of the realisations of the difficulties of translating resource potential to achievement of development objectives, processes of commercialisation became one of the main interests in this field for international development. Resulting in work with a further shift in emphasis towards prescriptive strategies for development and application (Marshall and Schrekenberg, 2001; Neumann and Hirsch, 2000). However, while NTFPs have been a focus for development

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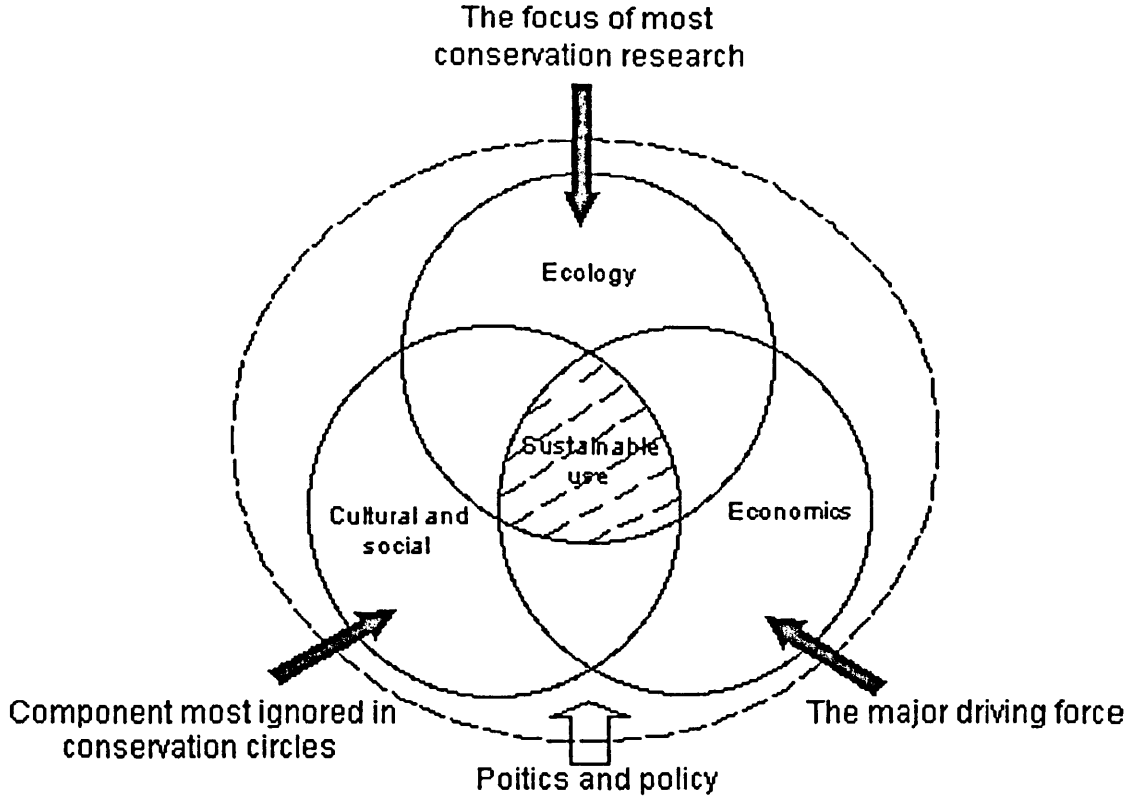
[5] Linked to this area is bioprospecting, where plant material is screened for useful compounds or properties, particularly specialist chemicals and medicines. When traditional ecological knowledge is used to identify properties of products used by a people that may have commercial applications, there becomes an issue of intellectual property rights. This field has been the subject of much recent controversy over the distribution of benefits from discoveries resulting from traditional ecological knowledge, and the term biopiracy has been used. The system of intellectual property rights is in itself problematic as some societies regard nature as an extension of society.

activity their development has not always proved effective in maintaining the forest resource, contributing to sustainable development or broadening the economic base of local populations (Hall and Bawa, 1993), and reliance may in fact sometimes perpetuate poverty (Neumann and Hirsch, 2000). While such social issues have been identified as important in addressing these failings until recently they have received scant attention in this literature, as illustrated by Figure 1.

Figure 1: Achieving sustainable resource use. After Martin (1994) in Cunningham (2001 p 6)



An example of this is Wollenberg and Ingles' 'Incomes from the Forest' (1998) which draws on experience of NTFP commercialisation projects to identify lessons for development. Here it is interesting to note that while economic and environmental factors are thoroughly addressed, social factors receive scant attention. Involving local stakeholders in planning and assessing the social impacts of NTFP projects are only mentioned briefly. This is perhaps the result of the policy priorities of development forestry, such as poverty alleviation and more recently poverty eradication, where the more easily quantifiable economic and ecological factors have provided an immediate measure of progress.

In another major work on NTFP commercialisation Neumann and Hirsch (2000). identify three areas of literature on socio-political aspects: land and resource tenure, the role of women in NTFP harvesting and processing and the role of NTFP commercialisation in poverty alleviation. While Neumann and Hirsch conclude that NTFP commercialisation may be unsuccessful in poverty alleviation or even contributory to the perpetuation of poverty, they acknowledge that issues of tenure and gender are tied to wider political struggles for economic and social justice They also note that these issues are highly complex and regimes vary greatly from place to place, making it difficult to formulate generalisations or predict outcomes. However, what is not addressed is whether the failure of commercialisation to achieve policy aims is due to commercialisation itself or to the specifics of the process of commercialisation. Marshall et al (2001) attempt to address this in their work in Mexico and Bolivia, investigating the influence of poverty and gender issues on commercialisation and sustainability, and attempting to make regional generalisations and to identify the relative importance of factors in successful commercialisation.

McLain's work on the political ecology of wild mushroom harvesting in the Pacific Northwest takes the rural development agenda a step further to investigate the dynamics of power and politics around the commercial harvest of a resource (McLain, 2000, 2002; McLain et al., 1998). Several other studies also take this approach (Hansis, 1998; Yeh, 2000), analysing the use of NTFPs according to how political and power dynamics influence how and why a resource is harvested, who harvests and how benefits are shared.

These studies on the process of commercialisation investigate the impacts of changes in practice, but rarely look closely at pre-commercial use of NTFPs or concurrent non-commercial use, and so have little basis on which to assess the change. This thesis therefore assesses both commercial and non-commercial use together, because of the extensive non-commercial use of NTFPs in Scotland, and in an attempt to understand the interplay between non-commercial and growing commercial use and an important contributor to livelihoods and lifestyle.

Several studies that do focus on both commercial and non-commercial harvesting have been carried out in the United States. Emery's work on harvester livelihood strategies on the Michigan Peninsula identifies the role of NTFPs in rural culture and economies, and makes links to the importance of NTFPs in local livelihoods in policy and management (Emery, 1998, 2001a, 2001b). Emery uses Polanyi's (1977) understanding of livelihood to mean the support of both physical and cultural survival, and therefore the role of NTFPs in supporting household economies in a non-commercial context, but also in maintaining traditions. Several studies make the important point that motivations for harvesting activity are often overlapping, including elements of commercial gain or household support as well as cultural importance (Anderson et al., 2000; Carroll et al., 2003; Hinricks, 1998). These studies all recognise the overlapping nature of livelihood use in fern, huckleberry and maple syrup gathering respectively, which Carroll et al describe as 'somewhere between'. This study too emphasises the inextricability of livelihood and cultural purposes for harvesting, and like these studies, sees harvesting as being socially embedded in the lives of gatherers. This study takes that idea a step further, seeking to identify harvesting as an activity not just reflecting, but integral to lifestyle and in cultural identity.

The studies described above all tend to have harvesters at their focus. Harvesters form the interface between the growing product and the market in sustainability studies and are perceived as being the group most vulnerable to change and receiving least benefit from the sale of goods in commercialisation studies (Neumann and Hirsch, 2000). Studies on power dynamics also focus on harvesters as the group with the least decision making power in policy and management. Commercialisation studies also place emphasis on downstream NTFP buyers and processors in gain a greater understanding of routes to market, in order to identify methods to increase stability and improve returns to harvesters. While this thesis also investigates downstream NTFP use, the intention here is to follow the focus on harvesters, locating them at the centre of a web of relationships with other users, making harvesters the starting point for analysis of perceptions of value and importance in utilisation.

Disciplinary approaches to studying NTFP use.

As can be seen, literature on the utilisation of NTFPs comes from a wide range of disciplinary backgrounds including ethnobotany, economic botany, natural resource sociology, cultural geography and political ecology, with shifting emphasis from harvest to harvester and to harvester relations with wider management and policy contexts. As this thesis falls in the later part of this spectrum I will briefly review how the disciplinary approaches of natural resource sociology and political ecology can be applied to the study of NTFP utilisation.

In the US there has been much recent debate within the field of sociology over the divide (or not) between natural resource sociology and environmental sociology, a divide that appears less pronounced in Europe but which does have some bearing on this thesis. The differences between the two disciplines are seen as being in definition of the environment, scale or unit of analysis, overarching problematic and degree of theory (Buttle, 2002). Natural resources sociology often deals with problems on a local scale where it is feasible to make detailed proposals for changes in natural resources use. Environmental sociology tends to deal with issues on a global scale, and so naturally tends towards theory. This separation of the disciplines into distinct scales of operation makes it difficult to address how local issues combine to become global, or to understand how global issues impact at a local level. Table 1 shows how these differences are closely linked to each other. It is apparent that the differences described in Table 1 all follow from differences in scale. Natural resources sociology often deals with problems on a local scale where it is feasible to make detailed proposals for changes in resource. Environmental sociology tends more to be on a global scale, and naturally tends towards theory where recommendations for application would be insufficiently detailed. In the context of a small country it is possible to address issues of equity in distribution and management on a national scale, and therefore it is necessary to cross these boundaries in scale and problematic.

Table 1: Differences between natural resource sociology and environmental sociology. Adapted from Buttle (2002 p 207)

	Natural Resource Sociology	Environmental Sociology
Definition of the environment	Local resources – forests, minerals etc.	"Singular", encompassing.
Scale or unit of analysis	Local ecosystem or region.	Nation state and beyond.
Overarching problematic	Small scale questions of the equity of distribution and management.	Explaining environmental degradation.
Degree of theory	De-emphasis on social theory – applied.	Theoretical.

Political ecology aims to bring these two approaches together: addressing the wider issues of the global at the detail of the local scale; bringing together environmental and resource use concerns through study of the dynamics of power and control. For example Peluso states that:

> Political ecology emphasises the social relations within which actors are embedded and which affect the ways they use the environment rather than the collective human environment interactions of a group of individuals. (Peluso, 1992 p 51)

However, the divisions within sociology are to some extent mirrored within political ecology. McLain identifies two major strands of political ecology: the first incorporates local level power dynamics into macro level analysis; the second does the reverse and incorporates global issues into local level analysis (McLain, 2000). These divisions may be indicative of political ecology's status as an emerging discipline, and the remnants of past disciplinary allegiances showing through. This thesis clearly identifies with both strands, bringing several local level analyses together to identify commonalties and differences. In doing this it seeks to understand NTFP utilisation on a regional level in temperate, western countries and the inter-relationship between harvesters and the wider social structures they are a part of.

Access theory

The way in which products are used, and by whom, is dictated by access to resources. This refers to access by its widest definition; how property rights (legally held and otherwise) and their regulation, physical access and availability of resources; other social processes such as access to technology, capital and markets; and access to knowledge and authority and social identity impact on access to resources. Taking a political ecology approach, Ribot and Peluso (2003) developed a theory of access as an overarching method of systematically categorising and analysing the factors that influence the way in which individuals are able to use natural resources and the extent to which they are in control of their access. Although the notions of cultural and political influences on access to resources, and of rights to access resources are recognised in this and other subject areas – such as health (Prille Hensky, 2005), education and the arts (The Cultural Commission, 2005) – it is perhaps surprising that this theory of access to natural resources has not been brought together previously.

In developing their theory Ribot and Peluso draw on the precedent of previous publications where wider definitions of access have been used; these examples are largely drawn from the field of development, with a geographical concentration on Africa. This geographical concentration suggests that while socio-political processes in the West certainly impact hugely on access to natural resources, it has not previously been centrally articulated in these terms. Similarly, studies in the related field of environmental justice rarely focus on the distribution of access to natural resources on a national or regional basis. Instead studies focus either on global issues of environmental degradation such as air pollution and climate change, or on a very local level on issues (again of environmental degradation) such as the location of landfill sites, quarries etc. These types of studies illustrate the two developing strands of political ecology; the incorporation of local level power dynamics into macro level analysis; and the incorporation of global issues into local level analysis (McLain, 2000), which are present again in the well developed in the sociological study of spatial inequality (Lobao and Saenz, 2002).

Issues of access are also often discussed in political ecology studies, frequently couched in terms of power relations. In this field there have been studies relating to NTFPs. These studies tend to focus on specific groups or issues such as issues of race and ethnicity (Hansis, 1998; Hansis et al., 2001) relationships with policy making and implementation (McLain, 2000) all examples from the US or claims based on social identity as a member of a geographically defined social grouping (Yeh, 2000) (in Yunnan Province, China). This study and the approach taken by Ribot and Peluso, differs in that it attempts to analyse a broader set of issues in relation to distribution of and access to resources.

Ribot and Peluso's theory of access is structured as a set of categories that map the processes and relations that shape access. They begin with mechanisms of access including rights based access, and then a series of additional factors under the heading of structural and relational mechanisms of access such as technology, capital, markets, labour, knowledge, authority, social identities and social relations. Ribot and Peluso acknowledge that this list is not exhaustive and that there will be different factors in every case. This framework is useful in addressing the use of NTFPs in Scotland as it allows the analysis of access to resources by many groups and subgroups of stakeholders and an ordered and comparable way and will guide my discussion of the nature of access to NTFP resources in Scotland.

Methods of data collection and analysis.

Other NTFP utilisation studies have used, in one form or another, grounded theory as a system of constant reflection on research findings as a form an analysis to inform future research. Grounded theory was developed, primarily by Glasser and Strauss as a guide for researchers to build theory around qualitative data such as interview or workshop transcripts, and then focus further data collection on those findings in order to develop and refine theory (Charmaz, 2000). Grounded theory develops argument by beginning with notes on the likely implications of aspects of the data known as memos that are made as a form of reflection on the data collected. These memos will in turn influence the conduct of future research, and link to other data sources. Memo making prepares for coding, where recurring themes in the data are identified and these

themes analysed through the creation of a structure or framework which relates these themes to each other and allows for more in depth analysis. For these reasons, data collection and analysis are discussed here together.

In this thesis I acknowledge my position in relation to research participants and consider the impacts that these relationships might have (see the Conclusion and the following section on data collection techniques). Charmaz reports that Strauss' later work with Corbin's has acknowledged the differing realities of the researcher and the participant and proposed procedures for giving voice to participants and recognising conflict. Charmaz proposes an extension of grounded theory – constructivist grounded theory, which:

> assumes the relativism of multiple social realities, recognises the mutual creation of knowledge by the viewer and the viewed, and aims toward interpretive understandings of subjects meanings. (Charmaz, 2000 p 510)

Charmaz's suggestion is particularly appropriate to the approach taken by this thesis, where the values and realities of groups of NTFP users are the starting point for analysis. Post-positivist versions of grounded theory are not prescriptive about the methods of data collection to be used, however, data collection methods must reflect these post-positivist concerns in order to give accurate, verifiable representations of the views of participants. Participatory approaches to research combines a constructivist approach to theory building with methods for involving participants in research, enabling participants to conduct research and analysis themselves through a structured process. Here I have employed this approach, involving participants in the building of theory and the direction of research.

This study seeks to use multiple methods to address the complexity of the issues raised by multiple stakeholder groups in accessing resources. As well as seeking to use these methods to triangulate (to confirm the results of one piece of research against another), this use of multiple methods also allows subsequent interrogation of differences or gaps in the data, and to add 'rigour, breadth, complexity, richness, and depth' (Flick, 1998 p 231) and also to display multiple, refracted realities simultaneously (Denzin and Lincoln, 2000).

These techniques are advocated by many political ecologists: (Blaikie and Brookfield, 1987; Carney, 1993; Nightingale, 2003; Rocheleau, 1995; Schroeder, 1993; Scminck and Wood, 1992).

In this thesis I have used several approaches: continuous research and professional involvement with NTFPs in Scotland; and overseas case studies. In my work in Scotland I have used studies designed to address a particular issue with a group, which are detailed in the following section. Through my practice as a researcher and consultant on NTFPs, this is something I am a participant in as well as an observer, and through this I have also been able to use a more opportunistic, but none the less rigorous and deliberate analysis of the everyday meetings and seminars, communications (conversations, email exchanges etc), media coverage and other documents and participant observation of forestry professionals and other user groups. These multiple methods and case studies provided cross checking and triangulation for each other, and increasing depth of analysis by participants beyond their own experience.

In this thesis the computer application QSR Nud*ist was used to analyse interviews and workshop transcripts. This software has tools to allow memo making and coding and the comparison of multiple documents and document types. This formalised coding gives an extra layer of analysis on top of that already done in the conduct of the work (as I will describe later in this chapter) and is a useful means of storing large amounts of data and coding.

From this outline strategy, my initial task was to identify stakeholder groups or user types in Scotland. While assumptions could be made about which user groups to include in the research, and the best technique to use in order to engage with the user group, it has been essential to keep the research design flexible. As a piece of action research the focus and participant group in each following study does not become entirely clear until previous study has identified priorities for further investigation. Flexibility is also needed in the definition of the user groups and to some extent key terms such as 'NTFP' and 'use', as a this is a piece of participatory research, and in order to reflect the cultural identity of those groups, need to be defined by the users themselves.

Working with such a wide variety of actors, both in Scotland and abroad, theory relevant to the particular circumstances of the group emerges. These theories must then be woven together, relating theories to each other with regard to the relationships between groups and cross checking the accuracy of assumptions. But the wide variety of actors also limits in the extent to which the research can remain participatory throughout the process. The interest of the participants themselves is often limited to what will be of use to them, and hence many of the research participants have opted out of the later stages of analysis when the studies were drawn together to compare experiences among all groups involved. At this point, an additional layer of analysis draws these experiences together, to give a more theoretical understanding to the study of NTFP utilisation. I do this by drawing the studies together in answer to the research questions set out earlier in the chapter and also through analysis of access to resources through Ribot and Peluso's 'Theory of Access' (2003) as described earlier.

SECTION 2: METHODS

Stakeholder analysis

The stakeholder groups identified as having a role in NTFP utilisation, and the main issues to address with those groups are shown in Table 2. The following section on data collection details how these groups were engaged in this research, but first I will describe the issues faced in engaging with these groups. This is intended to give a brief overview of the issues faced in working with these groups, and the key issues for exploration, which are of course, discussed greater detail in the following discussion chapters.

Harvesters

This group is divided into many different subgroups, many of which overlap, according to the types of products harvested, and the purpose of harvesting. Chapter Two, on harvesters, describes in detail the difficulties in categorising harvesters. The way that harvesters work is also very variable, making multiple strategies for engaging with harvesters necessary. In the UK harvesters rarely work in groups, so the majority of opportunities to engage will be with individuals. Harvesters of some commercial products, such as mushrooms, sell

to established buyers and so there is a known place where harvesters will come to sell.

Table 2: Stakeholder groups and areas of investigation.

Stakeholder Group	Main issues to address
Harvesters	• What is harvested and reasons for harvesting. • Values and importance of harvesting/harvested goods. • Relationships with other groups.
Buyers and processors/wholesalers/ retailers	• History of buying/processing activity and business. • Values and importance of buying/processing activity. • Relationships with other groups.
Consumers	• Details of consumption. • Value and importance of products consumed.
Landowners/managers	• Knowledge of harvesting activity. • Knowledge of management a techniques/ impacts of management on NTFP harvests. • Relationships with other groups.
Support organisations	• Background to development of support organisations (assessment of need). • Support activities. • Relationships with other groups.
Research organisations	• How research is commissioned/initiated. • Research activity. • Relationships with other groups.
Conservation organisations	• Knowledge of harvesting activity. • Own activity in relation to NTFPs. • Relationships with other groups.
Regulatory Bodies	• Role as policy making bodies • Role in the implementation of regulation • Relationship with other groups

In the case of harvesting for non-commercial uses, such as subsistence, recreation or exchange, harvesters are much more difficult to trace, harvesting at sites known only to themselves and returning home. Opportunities for meeting and engaging with these harvesters are therefore limited, unless they gather for a meeting of a special interest group, and as such are unlikely to be entirely representative even of that interest group. Following from the difficulties of engaging with non-commercial harvesters, those involved in chains of non-market exchange are also difficult to trace and engage. Opportunities to

work with participants have often occurred as a result of my continuous professional involvement with harvesters and other groups rather than as the result of specific efforts. Given these difficulties and the constraints of time and budget, it is also important to acknowledge and analyse the gaps in participation by harvesters.

Buyers and processors

These are generally a much easier group to engage, as it is generally important for them to be visible in order to carry out their business. However, there are some areas of buying and processing where it is more difficult to represent participants concerns. In the case of some commercial harvests there may be both legitimate and illegal elements. For example, in the case of moss harvesting in Lanarkshire, legitimate harvesting occurs in plantations of non-native trees under a permit issued by the landowner. As well as this legitimate harvest there is also some harvesting that takes place in more environmentally sensitive areas, such as bogs, without the consent of the landowner. Some products, such as bluebell bulbs, are also harvested despite being protected species. Buyers of these illegally harvested products are unlikely to be either easy to trace or willing participants. This pattern of legitimate and illegal harvesting and buying is repeated to some extent wherever permit systems are in operation and where there are protected species with a commercial market. As with the harvester group it is important to both analyse and acknowledge gaps in participation and overlap with other groups, such as harvesters, particularly in terms of small scale processing.

Consumers

A rather amorphous group, and not easily accessed without a large-scale consumer survey. However, all those involved in NTFP utilisation at other levels tend also to be consumers of NTFPs, and so it is possible to engage consumers through these other groups. As a result I have included factors with regard to consumption of goods in with each discussion chapter.

Landowners and managers

A more identifiable group, with both institutional meetings, which attract a good range and number of members, and a willingness to respond to surveys as well as more in-depth participation on issues that concern them. However, it must

also be remembered that many landowners in the UK have very little (though increasing) awareness of the NTFP harvesting activity that may or may not be occurring, or of the reality of NTFP markets. Starting from this position it is important to first investigate what landowners and managers perceptions are, and how these perceptions are influenced, before proceeding to more in depth analysis.

Community groups are increasingly important as woodland land managers in Scotland. Community woodlands are very varied, with a great variety of management objectives, sizes and scopes of membership. Community woodlands may have a management agreement with a landowner, a lease, or own the land outright with varying degrees of management control. Members of community woodland groups also have an important role as gatherers of NTFPs, again for a variety of uses from subsistence to recreational. The interests of this group are spread as harvesters, land managers or owners and consumers and therefore these interests are discussed in both Chapters Two and Four. These groups are relatively easy to identify as they are often members of the community woodland network formerly administered by Reforesting Scotland and now by the Community Woodland Association.

Organisations

Organisational participants are discussed together in Chapter Five, but cover a wide range of interests and approaches. These interests could be categorised as research, support, conservation and regulation. Each of these interests is discussed briefly below.

Support and research organisations

This grouping is easy to identify, though different individuals within an organisations may provide different perspectives depending on their role. It is important to investigate how these organisations activities are initiated and funded in order to understand motivations for research or support provision, and the form that this takes. It is also necessary to investigate the inter-relationship of this group with other stakeholders, particularly harvesters and buyers/processors, to understand whose needs are served.

Conservation organisations

Again these are easily identified and engaged and are quite varied in scope and size, from local to international NGOs and parts of government bodies. These organisations can therefore operate on many levels, from producing national policy, and strategy recommendations to local level operations. How organisations develop policy and the basis on which decisions are made must be investigated alongside how these decisions are implemented on a local level. In some cases national policies held by organisations are interpreted very liberally at a local level.

Regulatory bodies

Policy and legislation pertaining to the use of NTFPs is implemented through government agencies. These are therefore easily identifiable, though there are occasionally difficulties in identifying exactly which agency would responsible for a particular practice or activity because there is no history of involvement. As with conservation organisations, the making and implementation of policy and regulation occurs at multiple levels and geographical scales within government agencies, and therefore it is important to address the individual roles of these levels as well as give an overall picture.

Some individuals or groups will not fit easily into a single one of these categories. As I mentioned earlier, consumers are all these groups as well as those who are exclusively consumers. In some cases research organisations also act as support organisations, and government bodies can have many functions from research, to support to regulation to conservation. Scottish Natural Heritage, according to its aims, must safeguard the natural heritage, foster awareness and understanding, promote responsible access and encourage environment sustainability in economic activity (SNH, 2004). These complex responsibilities therefore give rise to a somewhat overlapping analysis.

Data collection techniques

This thesis seeks to engage with many different stakeholder groups and consequently employs several data collection techniques. The data collection methods in each of the studies are outlined below. These are listed roughly in

chronological order of development and execution, finishing with those that were ongoing throughout the research. In doing this I hope not only to describe how the research was conducted, but also to trace its development, each study building on the last in the manner of constructivist grounded theory described earlier. Each study description gives a key to the way in which the study, or an element of the study, is referenced in the text of the discussion chapters. These keys are also collected together in Appendix Two.

Though this thesis focuses mainly on Scotland, two other study areas, Finland and the Pacific Northwest, were used for comparison and illustration. Before going on to describe the studies themselves it is worth briefly exploring the differences between the study areas and their implications for analysis. Table 3 gives a summary of these differences.

There are marked differences in the percentage cover of forestry, the continuity of the history of use and the complexity of regulatory frameworks. There are, however, also marked similarities in the way in which NTFPs are harvested; generally informally and involving different groups of people to the harvest of timber.

Scotland has had long historical traditions of use, though a distinct cultural gap developed at around the time of the Second World War and continued to the 1970s when NTFPs regained some popularity. A second resurgence began in the 1990s and continues to date. It is perhaps because of the interrupted history of use that Scotland now finds itself with a system of unregulated ad hoc use.

Table 3: Comparison of geographic factors in NTFP use in the three study areas.

	Scotland	Finland	Pacific Northwest
% Forest cover	16.4[6]	73[7]	49-60[8]
Population density (persons/km^2)	65[9]	17[10]	4.5-34.2[11]
History of use	Continuous historical use, but with a cultural gap occurring between the 1940s and 1970. Use, interest and knowledge slowly building and gaining pace in recent years.	Long term continuous historical use, maintenance of links to the land as the population becomes increasingly urbanised, so that even as use has declined, knowledge is maintained.	Long term continuous use of products with recent large increases in demand as migrants from different ethnic groups arrive and as globalised markets emerge.
Regulatory framework	Ad hoc use, little in the way of regulation.	'Everyman's rights' allow free access for most products for both commercial and non-commercial purposes.	Very complex and heavily regulated, differing for individual products and types of land ownership.

[6] (Forestry Commission, 2001 p 10)
[7] (Finnish Forestry Association, Undated)
[8] British Colombia 60% (BC Forest Information, Undated), Oregon 49% (USDA Forest Service, Undated), Washington 51% (USDA Forest Service, Undated).
[9] (National Statistics, 2002)
[10] (Peltonen, 2002)
[11] British Colombia 4.5/km2 (Statistics Canada Information, 2005), Oregon 13.7/km2, Washington 34.2km2 (United States Census Bureau, 2000).

In Finland land use is predominantly forestry and this leads to cultural differences in the definition of NTFPs, with mineral resources (such as peat and gravel, but even also snow and ice) often being included in definitions (Seinajoki Institute for Rural Research and Training, 2001). Finland has a historical and relatively undisturbed tradition of use. Access rights and legislation are very simple, allowing harvesters to collect most NTFPs without the permission of the landowner.[12] NTFP harvesters also enjoy very supportive tax breaks and harvesting and commercialisation is encouraged by many initiatives.

The Pacific Northwest also has a relatively high forest cover, and has had a continuous history of use. By contrast, however, this history has been punctuated by successive waves of migrants from different cultural groups who have brought with them traditions of using particular products. This diverse history of use, coupled with the growth of international markets, has led to high profile commercialisation of some products such as mosses, matsutake mushroom, salal (floral greenery), and Pacific yew (for the breast cancer drug, taxol). In some areas use is fairly intense and this has resulted in a complex regulatory climate, with different rules for different products, harvested for different livelihood purposes under different land ownerships.

The studies

Finnish Study: NTFP values and importance.

The purpose of this study was to investigate NTFP values and importance in a country where both NTFP use and markets are developed to a greater extent than in the UK, and also where there has been a continuous history of use. Finnish and Scottish experiences could then be compared to analyse differences and similarities. The study focussed on NTFP businesses, support organisations and regulatory bodies, though to some extent those representing businesses and support organisations were also involved with harvesting. The groups that were chosen for this study are those who have been involved in implementing development in Finland, and are therefore of particular relevance

[12] There are some regional and product specific exceptions, such as mosses, lichens and cloudberries in the north of Finland where these are commercially and culturally very important.

to Scotland which is currently experiencing increased interest in developing NTFPs.

A snowballing technique (Valentine, 1997) was used to find interviewees in the stakeholder groups discussed above beginning with an initial set of contacts in several areas and being passed on to those who the key contacts considered to be important informants or stakeholders. In accordance with grounded theory methods, the number of interviewees increased until no new material was generated and the range of interviewees was identified as broadly representative of the NTFP sector in Finland according to the experience of the key contacts. Semi-structured interviews were conducted in English with the help of a translator and were recorded with the permission of the interviewee. As these translators were also often NTFP specialists these interviews occasionally became a three-way discussion before reverting to the interview format.

The interviews were structured in four parts: firstly, an explanation of the research was given to the interviewee to give them an idea of the research agenda and scope. Secondly, background information was established on how the participant came to be involved with NTFPs; how their business or organisation (and their role in it) had come about; and what the current role and structure of the organisation was. Thirdly, the participants were asked about what they saw as important in successful NTFP utilisation. This was asked as an open question, where interviewees were asked to group their observations into subject areas. In other words the interviewees were themselves beginning the process of coding and analysis. In the final part of the interview participants were asked to prioritise the suggestions they had made on values in order of importance. During this part of the interview the conversation often turned on the relationships and influences between factors, again working out the relationships between codes and continuing analysis.

The participants in the research are listed in Table 4 below. Most of those interviewed had a central interest in NTFPs, but several others with peripheral interests were interviewed. For instance, a lawyer with an agriculture and forestry union was interviewed to explore legal issues around harvesting and

landowners' attitudes to harvesting. Similarly, a local government officer was interviewed to explore how local and national programmes support the development of small businesses and a representative of an international NGO was interviewed to explore how NTFP development in Finland fits within an international context.

Table 4: Finnish study interviewees.

Interview Reference	Type of participant	Type of organisation (location)	Area of influence
Buyers/processors/wholesalers/retailers			
Finn 1	Proprietor	NTFP processor, retailer and support organisation. (Sienajoki, South West)	Regional
Finn 2	Proprietor	NTFP Harvester, processor and retailer and support organisation. (Sienajoki, South West)	Local
Finn 3	Proprietor	NTFP Buyer and distributor. (Joensuu, South East)	Regional
Finn 4	Proprietor	NTFP processor. (Kainuu East)	Regional
Finn 5	General manager	NTFP processor and retailer. (Kainuu East)	Regional
Finn 6	General Manager	NTFP processor. Kainuu (East)	Regional
Support/research organisations			
Finn 7	Project Leader	Research and support organisation. (Sienajoki, South West)	National
Finn 8	Researcher	Research and support organisation. (Sienajoki, South West)	National
Finn 9	Director	Support organisation, market development. (Suomussalmi, East)	National
Finn 10	Researcher	Forestry research agency. (Helsinki)	National
Finn 11	Senior Adviser	Ministry of Agriculture and Forestry. (Helsinki)	National
Finn 12	Policy Adviser	Ministry of Agriculture and Forestry. (Helsinki)	National
Finn 13	Project Leader	Forest research agency. (Helsinki)	National
Finn 14	Project Leader	University. (Helsinki)	National
Finn 15	Researcher	University. (Joensuu, South East)	Regional

Interview Reference	Type of participant	Type of organisation (location)	Area of influence
Finn 16	Researchers x2	University. (Joensuu, South East)	National
Peripheral interests			
Finn 17	Local Government officer	Local government. (Suomussalmi, East)	Local
Finn 18	Programme Manager	International NGO. (Joensuu, South East)	International
Finn 19	Lawyer	Forestry and Farming Union. (Helsinki)	National

The interviews were transcribed and entered into QSR Nud*ist for textual analysis. From these transcripts and field notes a series of codes were developed to denote various aspects of importance and value identified by participants. In the analysis where there was input from the translator it was also identified and coded according to the translators' own group affiliation.

The development of NTFPs in Scotland

In December 2001 I was commissioned by Scottish Enterprise to conduct a study into the potential for NTFP development in Scotland, identifying products for which markets exist and which can be harvested sustainably. A more detailed market study was commissioned alongside this (Dyke and Primrose, 2002). In order to disseminate the findings of this study the Institute of Chartered Foresters (ICF) organised a seminar for its members and a wider forestry audience at New Lanark in May 2002. The seminar consisted of a morning of presentations on different aspects of the study, followed by three concurrent workshops. The themes and format for these workshops were developed in consultation with the ICF and Scottish Enterprise, and were designed particularly to address some of those areas of interest identified in the Finnish study. The workshop topics were: future research needs, marketing and woodland management for non-timber forest products. These were facilitated by the myself, David Primrose (Russell Ferguson Marketing) and Fergus Tickell (Chief Executive of Ormasary Estate) respectively. The aim of the workshops was to facilitate discussion of the issues around NTFP development, to establish areas of importance and identify priorities for future development. In the text these workshops are referred to as follows:

Table 5: Lanark workshop codes

Ref. Number	Workshop
LW1	Future research needs
LW2	Marketing
LW3	Woodland management for non-timber forest products

The workshops had a fairly open format and each facilitator took a slightly different approach. The participants were given the opportunity to suggest items for the agenda and identified issues raised in the morning's presentations at the start of the workshop, and then worked through these to reach priorities at the end.

Those attending included public, private and NGO woodland managers and owners, forestry professionals, academic researchers and some representatives of NTFP businesses. Those present were self-selecting, but were made up of an invited audience of members of the ICF and respondents to wide advertising in the forestry sector (See Table 6). The exact composition of each workshop was not recorded, though the make up of the three groups reflected the theme of the discussion: those with research and consultancy interests attending the research workshop, those with woodland management interests attending the woodland management workshop, and others attending the marketing workshop.

Table 6: Those attending NTFP development workshops

Type of participant	Type of organisation (Location)	Area of influence
Buyers/processors/wholesalers/retailers		
Proprietor x2	NTFP business (Glasgow, Inverness)	National, regional.
Landowners/managers		
Chairman	Forest industry body (Edinburgh)	National
Senior executive x5	Forestry Commission (Edinburgh)	National
Senior executive x4	Forest Enterprise (Edinburgh, Inverness)	National
Forest managers x6	Forest Enterprise (Lochaber, Rannoch, Dumfries and Galloway.)	Regional

Type of participant	Type of organisation (Location)	Area of influence
Estate Manager x3	Forested Estates. (Cumbria, Argyll, Borders)	Local
Community woodland representative	Community Organisation. (Argyll)	Local
Arboriculturalist	Local Council. (East Lothian)	
Forest manager x16	Forestry consultancy (Perth, Edinburgh, Dundee, Borders, Stirling)	National, Regional
Business development/senior managersx3	Forestry consultancies. (Edinburgh)	National
Support organisations		
Development officers x3	Forest industry bodies. (Edinburgh)	National
Development officer	Government body. (Edinburgh)	Regional
Development officers x5	Local development (Lanark, Glasgow, Northumbria, Cumbria)	Regional, Local
Researchers		
Student	University. (Wales)	National
Researcher/consultants x4	Universities. (Edinburgh, Wales)	National
Researchers x2	Government body (York, Edinburgh)	National
Lecturers/ teachers x4	Universities and other education bodies. (Lancashire)	Regional
Consultants x3	Forestry/rural development consultancies. (Edinburgh, Dublin, Newcastle)	International, National, Regional
Conservation organisations		
Area officer	Government agency. (Dunbartonshire)	Local
Senior Executive	National conservation NGO. (Perth)	National

The workshop discussions were recorded with the permission of the participants and then were transcribed and entered into QSR Nud*ist. The discussions were then coded, relating where possible to the codes for the Finnish interviews.

Several issues emerged from these workshops for further investigation, the first was the sustainability of harvesting and the dearth of specific information on sustainable harvesting levels and harvesting methods for most products. The issue of sustainability was of particular concern to researchers and conservation organisations and consequently addressing this concern with harvesters became a priority. A second issue to emerge was that land managers were in general unwilling to consider becoming involved in the sort of micro scale enterprises that feature in NTFP buying and processing. Again, this issue became a priority to address with those who do use NTFPs on a micro scale in Scotland. Thirdly landowners and mangers have very little knowledge of the availability of resources on their own land.

Inventory Study: Resource availability

In summer 2002 I received funding from Scottish Enterprise and Highlands and Islands Enterprise through Reforesting Scotland to develop a method for assessing NTFP resource availability in Scotland's woods. The purpose of the study was to enable anyone with limited plant identification and ecological survey knowledge to assess resources. For the purposes of this study I chose to test the method in six community woodlands around Scotland. Community woodlands were chosen to be surveyed as community woodland groups had expressed interest in identifying the resources available in their woods. Although community woodlands were selected for the trial the method was designed to be equally applicable to woodlands under different regimes of ownership and management. The six woodlands are described in Table 7.

The first step in the inventory method was to discuss with the members of the community woodland groups what NTFPs they were currently using and what their priorities would be for any future development. From these discussions priority species were selected, together with an area to survey. The next step of the survey was to conduct a formal inventory of the area selected for the species or product groups selected.

This study showed that community woodlands rarely provide sufficient volumes of products to supply commercial enterprises, but that there might well be sufficient resource within other woodlands in the local area when considered

together. The study also demonstrated that the woodlands surveyed have important functions as places of recreation and in some cases as visitor attractions. The NTFP species that are present in the woodlands are a potential means of providing education and recreational activity for visitors that are currently underused. Exploring in more detail what NTFP users value about the products they use is a step towards understanding existing use and how these resources can be promoted to new users.

Table 7: Woodlands surveyed

Woodland Surveyed	Type of Woodland and area surveyed	Community group objectives
Townhill Wood, Dunfermline, Fife.	Mixed woodland both coniferous and deciduous. 37.1 ha	High quality recreational and educational resource.
The Finlets, Deeside, Grampian.	Native pinewood. 90ha	Conservation and habitat restoration. Revenue generating activity.
Borgie Forest, Sutherland.	End of rotation Sitka spruce plantation and newly planted mixed broadleaf and Sitka plantation. 123ha	Multiple objective forestry, revenue generation for local community.
Kirkton Wood, Wester Ross.	Single aged plantation of lodgepole pine and Sitka spruce. 92ha.	Recreational opportunity and revenue generation for local community
Minard Castle Wood, Argyll	Mature mixed broadleaf and coniferous woodland. 85 ha	Recreational opportunity and revenue generation for local community
Balloch Wood, Dumfries and Galloway.	Mature mixed broadleaf and coniferous woodland. 65 ha.	Recreational opportunity and revenue generation for local community

Harvester workshops: The values and importance of NTFPs.

Two workshops were held at the Community Woodland Conference, hosted at Bettyhill in November 2002. The Community Woodland Conference is an annual event run in the past by Reforesting Scotland and from 2003 by the Community Woodland Association, where representatives of community woodland groups meet to share ideas, to learn from the experience of other groups and to receive updates on subjects of interest. As well as exploring how NTFPs contribute to livelihoods, these workshops had an additional aim to aid participants in building enterprises around NTFPs, particularly in terms of harnessing social and cultural values as a means of marketing NTFPs.

Participatory appraisal methods based on those developed by IIED in their Hidden Harvest Methodology (IIED, 1997) were used in the two workshops, which were each structured in the same way. To trigger discussion, participants were asked to use a seasonal calendar to show the products that they collected, this helped participants to focus on the range of products that they harvested, and what they used them for. The participants were then asked to form the products into general groups and to brainstorm the qualities that they valued about the products they used. Participants then used a matrix to score the groups of products against the qualities.

The two workshops had a total of 19 participants from all areas of Scotland, who are detailed in Table 8. Levels of dependence ranged from those who live on and largely off the land, to those who harvest occasionally for recreational purposes and to encourage visitors to come to the woodlands they own or manage.

Table 8: Harvester workshop participants

Harvesting activity	Number of participants	Location (s)
Mainly recreational and for own use/consumption.	7	Aberdeenshire, Edinburgh, Ross-shire, Borders
For exchange or barter	2	Inverness-shire, Dumfries and Galloway
Livelihood use in place of items that could be purchased	6	Dumfries and Galloway, Sutherland, Argyll
For the use of paying customers	4	Sutherland, Argyll

In these workshops, harvesters themselves identified the importance of sustainability in their own use of NTFPs, consequently, how this concern is recognised by land managing and conservation bodies became another area for investigation.

Pacific Northwest study: Involving harvesters in inventory and monitoring.

The final formal study in the series investigated the role of harvesters in the inventory and monitoring of NTFPs. The study was carried out in the Pacific Northwest of Canada and the United States, where harvester involvement in inventory and monitoring is becoming more common. Inventory and monitoring is carried out for a variety of reasons including documenting resource availability or establishing sustainable harvest levels and methods. This second reason is often motivated by a desire to change on-the-ground practice by harvesters; consequently the way in which the monitoring is carried out is likely to have a big impact on the final outcome. The case studies used in this study provide a useful way of investigating how harvesters and managers/conservationists interact over issues of sustainability.

The study was carried out while I was a visiting scholar with the Institute for Culture and Ecology (IFCAE) based in Portland, Oregon. IFCAE were at that

time coming to the end of a US wide study on the impacts of NTFP harvesting on biodiversity. My study contributed additional detailed case studies on inventory and monitoring to the larger project.

The three case studies covered in this study vary in stage of completion, product focus, geographical area and in objectives. The cases range from a project in development to involve salal harvesters in the collection of data on site location – in order to pinpoint site characteristics for commercial quality salal (a floral green), located on Vancouver Island, Canada, and involves harvesters and academics. The second case has completed the first phase of data collection and involved a harvester in gathering data on moss harvests in Hebo Forest District, Oregon Coast, and involves a harvester, researchers and forest service employees. The final case study has been ongoing for many years and is continually evolving to include new aspects of data collection and analysis on the harvest of matsutake mushrooms at several locations in Southern Oregon and the Cascades. This case study is a fruitful partnership between a mushroom harvester and US Forest Service employee.

Table 9: Case study participants

Interview reference	Case study participants
Moss Harvesting	
I&M 1	Harvest lease holder, harvester and data collector
I&M 2	Bryologist and project manager
I&M 3	Forest Service employee responsible for administering study
Matsutake Harvesting	
I&M 4	Harvester and project partner
I&M 5	Forest Service employee and project partner
Salal Harvesting	
I&M 6	Salal harvester and data collector
I&M 7	Extension project worker and project initiator
I&M 8	Extension project director

The case studies were developed using participatory techniques and semi-structured interviews with all those participating in the studies. These methods

were designed to build up a picture of how the case study had come about and what its objectives were, how it was structured and operated, and how the participants viewed progress so far. I developed a framework using factors such as the representativeness of the harvesters involved in the case studies, who was involved at different stages of project development etc to analyse the case studies. Those who participated in the study are shown in Table 9.

INFORMAL STUIDES

The series of formal studies described above lead in a logical progression, each building on the findings of the previous study, as well as these formal studies I have had a great deal of informal contact with Scottish based NTFP users as a result of my work as a consultant and through my involvement with Reforesting Scotland. Throughout the my work in the area during the past six years I have used participant observation and personal communications through my professional and research involvement in forestry, and particularly NTFPs, participating meetings, workshops, discussion forums,[13] conferences and through everyday working contacts. These contacts have been with professionals in the fields of forestry and conservation, with NTFP harvesters, buyers and processors, landowners, managers, community groups and social and biological researchers. Over this period I have kept notes on these encounters that now provide background and depth to my enquiry.

These informal contacts have provided an ongoing opportunity to discuss ideas with others and analyse relationships among a wider range of actors. These informal studies have also enabled some of the gaps in the range of participants in the formal studies to be addressed. For instance, in the case of harvesters, the harvester workshops concentrated on members of community woodland groups, whereas as Chapter Two shows, harvesters are highly variable in the nature and extent of their activity. Past and continuing informal involvement with commercial harvesters in particular has helped to broaden the representativeness of the informants. Similarly, professional involvement with NTFP businesses, particularly through building and maintaining the website

13 Including an email group, NTFP Scotland, which I moderate whose members are made up of those who have attended workshops, who I have had professional contact with or who have requested to join the group

www.forestharvest.org.uk and through moderating the NTFP Scotland egroup has helped with the comparison of Finnish experience.

SECTION 3: LIMITATIONS OF THE DATA

In using case studies from overseas there are obvious cultural, historical and ecological differences which mean that the findings will never be directly comparable, but it is the impact of those differences (which are described earlier in this chapter) on the findings which enable comparisons to be made and lessons drawn. The way in which these case studies were carried out also obviously has an impact on the kind of data collected. In Scotland group work was used to a much greater extent as this was possible to organise through existing activities. The embedding of the research into existing discussions on NTFPs was a deliberate strategy to aid the participatory nature of the study.

While in some ways it would have been beneficial to use similar methods in the two overseas case studies (discussion between participants is particularly valuable for adding depth), it would have been impossible, given the timescale to arrange to take part in existing discussions in a similar capacity to my role in Scotland. Because it is the illustration of difference and similarities that is of interest in these case studies, the methodology used was able to identify different factors of equal interest. For example in Finland the use of translators meant that there was a dynamic set up between the interviewer, the interviewee and the translator(who was also involved in the sector in some way, often a support capacity) which was revealing about the relationship between the interviewee and the translator. In the Pacific Northwest, harvesters were very much aware of the power dynamics between themselves and the researchers with whom they were working and were perhaps more revealing about these relationships than they might have been in the presence of others.

With such a large area of study there will inevitably be gaps in data collection and areas which are not covered in great detail. The use of exercises like those used with harvesters on values associated with harvesting would have provided great insight into the extent to which values are shared and vary between other user groups. Holding in mind the different types of data collected, the influence

of other participants or the lack of other participants on individual responses, it is possible to make those gaps in the data speak too.

SECTION 4: ETHICS

All participants in the studies were informed of the research objectives of the particular study and the wider objectives of the research. Participants were also informed of links between the study they were participating in and other studies in the research. The outcomes of the research in terms of this thesis, outputs of particular consultancy projects and published papers likely to result, were also explained to participants together with an explanation of the projects supporters and funding. This explanation of the research was rarely given fully in writing, but provided a useful introduction that informed participants of the purpose of the study. However, having started on this formal note the scene was set for more traditional social research with roles set as the researcher and the researched. It was then necessary to break down that barrier of formality to begin interaction on a more equal footing, as other commentators have also noted (Gaventa and Cornwall, 2001).

Empowerment of participants is embedded in the purpose of participatory research, and as such the contribution of participants to the research should be acknowledged. In my participatory work I have found that participants sometimes actively wish to be named and acknowledged and see anonymity as a means of reducing their power and status, and of claiming their knowledge. While some ethics policies (such as Glasgow University's) are inflexible in their demand for confidentiality and anonymity this is not always desirable. However, as well as those issues on which some participants would like to be identified, there are other areas where knowledge is much more sensitive.

In many areas of NTFP trade there is an element of grey market or illegal activity. While those involved might be willing to be identified in talking about their own legal activities, they may be more unwilling to share their identity when talking about their own or others activities outside formal markets. These different levels of sensitivity are difficult to accord corresponding levels of anonymity, particularly as the same people may be involved at different levels.

Therefore, with some reluctance, all participants in the formal studies are made anonymous throughout – the use of any quotes has been agreed.

Ethical considerations obviously vary according to the characteristics of each study, but a crucial issue is that with the exception of the first and fourth studies all were carried out as consultancy or research projects for or with a client. In these cases my role was somewhat ambiguous being either a researcher or consultant for the client, and also possessing my own somewhat different research interests. While this did not lead to any apparent conflict of interest it was important to explain these two roles to participants and clients, particularly those with minimal involvement in the development of the thesis.

As with much participatory research, while the researcher is able to combine the roles of researcher and development worker into a single whole, the two roles are inevitably perceived differently by participants. Reflecting on the way in which participants perceive you as a researcher, and examining the impact of those perceptions on the way in which participants contribute to research is an important part of participatory work. My association with Reforesting Scotland set me up as a part of an pro-community organisation, which may have some negative connotations for private landowners and industry foresters who see community control as diminishing their own power. Working with Reforesting Scotland also gave me an association with an organisation that promotes the revival of a forest culture. On the other hand, Scottish Enterprise through the Scottish Forest Industry Cluster Group also funded my work. While Scottish Enterprise do fund community activities, such as the Community Woodland Conference, they are mainly perceived as a pro-traditional forest industry body. These two associations did serve to balance each other as both perspectives have undoubtedly influenced my thinking – however they also required careful explanation for some participants.

I have previously discussed the extent to which this research has been participatory, but it is necessary to briefly return to the subject to explore how ethical considerations have impacted on this aspect. Through my work with Reforesting Scotland I have worked with a network of community woodland groups, who are interested to varying degrees in utilising NTFPs. Some are

interested in developing NTFPs as an economic resource, while others use NTFPs for their own use. My work with Reforesting Scotland has since developed into collaboration with a small number of community groups to develop the use of NTFP resources. This development illustrates the interdependence of my work as a researcher with the commercial and cultural development objectives of local communities.

All participants have been welcomed to participate in this work to the extent to which they would like and have the capacity to be involved. Some of these groups have been involved at several stages in my work and have therefore have had a more in depth level of participation and a greater role in forming the structure of the projects. Other groups and individuals have only wanted to participate in one element.

It must be acknowledged that the majority of the participants in this study, particularly the non-professional participants are unlikely to have initiated research or thinking about NTFPs themselves (not least because this grouping of products does not exist for most users). While a landowner or community group might have thought of or be involved in exploiting a particular resource on their land, such as fungi or extractives, the investigation of all these products together is unlikely to have occurred. Bringing these products together as a field of study does however reflect the interests of many of the participants in the cultural or commercial resources that are available in woodlands.

The limiting factor in the involvement by participants has been their own interest. The community groups, as with other participants, have fairly local priorities. Unless issues are likely to impact on them in some significant way their involvement has generally been limited to those aspects of the study that are of immediate interest. The drawing together of the five formal studies and ongoing research that make up this thesis has therefore been my task alone, and therefore my responsibility to reflect the concerns and positions of the participants accurately.

There is however, some tension inherent in writing participatory research up as a formal thesis: firstly because the university requires it to be the work of one

author; and secondly the work is rendered more inaccessible by its size and limited distribution and also by its academic purpose. In an attempt to counter this I have disseminated the research in a variety of printed formats, through talks and seminars in order to share results and analysis with those who have participated. Details of these other outputs are given in Appendix Four.

CHAPTER 2: HARVESTERS

This chapter describes the demographic characteristics of NTFP harvesters in Scotland, the values that harvesters associate with the products that they harvest, their harvesting activities and how harvesters can be categorised according to their activities. In section 2, having discussed who the harvesters are, the chapter goes on to review the social, cultural and geographic factors that influence the diversity of harvesters and their access to resources. The chapter draws on quantitative data from several surveys, and qualitative data from two studies carried out specifically for this thesis; the first, two workshops with NTFP harvesters, the second a series of interviews with NTFP harvesters in the Pacific Northwest. In discussing these surveys and studies, this chapter seeks to explore who the harvesters are and how and why they use products, and what delimits their involvement. In doing so, it reveals relationships with landowners, buyers and government bodies through their interactions.

SECTION 1: HARVESTING ACTIVITY

Who are NTFP harvesters?

Collection of NTFPs in Scotland varies a great deal in intensity, regularity and purpose. Harvesting ranges from occasional opportunistic collecting while engaged in recreational activities, to intensive commercial harvesting, to subsistence harvesting of products which replace those that could be purchased for nutrition or other household use. Many other levels of commercial and subsistence use in both the formal and informal economies fall between these categories. Additionally, the same harvesters using different products for different purposes and at different levels of intensity, adds a further layer of complexity. Generally very little is known about how many harvesters are involved at each level.

A recent national omnibus survey was conducted by consultants on behalf of the Scottish Executive[14] and established a basic level of information about the proportion of the Scottish population that engages in harvesting on some level. The omnibus survey asked a stratified sample of 944 participants from across Scotland two basic questions about their collection of non-timber products. They were asked whether they had collected any tree or plant materials in and around woodlands and forests in Scotland in the last five years; those who had were asked if they had collected in the last 12 months and, if so what they had collected. In the last five years 24% of participants had collected some tree or plant material. The full results of the survey are shown in Appendix Five.

The sample for the first question is stratified according to the demographics of the population and at 944 is large enough to be representative of the population. Comparing this figure for with those in other countries suggests that the proportion of the population harvesting in Scotland is higher than could be expected for a country with a largely urban population that has supposedly lost touch with wild harvesting at least a generation ago. The figure is significantly higher than the 14-20% response in US surveys (Emery, 2003), but lower than the two thirds of the population who harvest in the Czech Republic (Sisak, 2003). Of those who had harvested in the last five years, 81% had also harvested in the past 12 months. This indicates that for the majority harvesting is an ongoing activity. There appear to be variations in the characteristics of those who harvested within the two time periods, in terms of area of Scotland, age group and distribution between the two sexes. Unfortunately as those who answered yes to this question were a subset (223) of the entire survey sample, the sample size is too small to be statistically significant.

Of those who harvested in the past five years, some characteristics are identifiable, namely that:

- Women are slightly more likely than men to have gathered (26% compared to 21%)

[14] This survey was carried out to establish the importance of NTFPs to Scottish people before a visit by an American NTFPs researcher to do ethnographic fieldwork in two areas of Scotland. The researcher, Marla Emery, together with Suzanne Martin of Forest Research and myself drew up the questions asked in the survey that was administered by consultants retained by the Scottish Executive.

- Those aged over 65 years are least likely to gather (14% compared to between 24-28% for other age groups)
- In terms of Socio-Economic grouping, ABs are most likely to have gathered (32%) whilst DEs are least likely to have done so (17%)
- Those resident in the North of Scotland are slightly more likely to have gathered (31%) than those in the East & South (25%) and West of Scotland (20%)
- Rural residents more likely to have gathered than those living in urban areas (31% compared to 23%)
- Part-time workers (42%) are more likely to have gathered than those employed full-time (20%) or not working (20%)

(Martin, 2003)

These characteristics change when it comes to the data set for those who have collected in the past 12 months, but it can be speculated as to what these differences represent. The key differences are that the more recent harvesters are more likely to be:

- Male
- Slightly younger (16-54, as opposed to 45-65).
- Less likely to be in socio-economic group AB, and more likely to be in group C.
- More likely not to be working
- Living in South/East Scotland

At the most crude level of analysis it could be surmised that the data from these two time periods represent two broad groups of harvesters, firstly middle aged, middle class female homemakers and part time workers who occasionally uphold family traditions of decoration and food production by harvesting relatively small quantities of products for use at home, or perhaps as gifts. The second group could be said to represent younger people of lower socio-economic grouping who have varying levels of livelihood dependence, but who use harvesting generated income, or product substitution, to supplement their earnings from other sources.

Whether this data does reflect any significant degree of livelihood dependence can be assessed through building up comparisons with other applicable surveys, including visitor profiles from general forest recreation surveys. The national visitor survey recorded in the Public Opinion of Forestry Survey (Scotland) 2003 records data on recreational visits to forests.[15] The results of the public opinion of forestry survey show that:

- Males are more likely to visit than females (68% to 59%)
- Those in employment are more likely to visit that those who are not (68% to 58%)
- Those who own a car are more likely to visit than those without (70% to 53%).

There was also variation by area, with those from the South of Scotland (87%) being significantly more likely to visit woodlands than those from the West (56%), those in the East (67) and North (79) having similar percentages. There were also significant differences between those who visit rural or urban woodlands by area – those in the North and West being more likely to visit urban woodlands. This indicates that at least some of the regional variation might be due to differences in woodland characteristics.

The results of the omnibus survey can also be compared to other data collected on commercial wild mushroom harvesters in 1998.[16]

- 52.6% were of working age (between 30 and 60).
- Were most likely not to be working – either on benefits or school children, though were more likely to be full time workers than part time.
- Almost 66% of those surveyed harvested exclusively for commercial purposes – others using between 20% and 50% of their harvest for themselves.
- Harvesters were divided into two groups (discounting those of school age), the majority (65.5%) earn less than 5% of their income from

[15] Recreation is defined as visits to woodlands for walks, picnics or other recreation

[16] This data was collected as a part of my MSc dissertation in 1998 and re-analysed for this purpose. The data was collected at mushroom buying stations in two areas, Muir of Ord and Aviemore (both in the area defined as the north of Scotland in the other two surveys) where there are prominent mushroom buyers. The sample is therefore unlikely to be representative of commercial harvesters as a whole, though the proportion of harvesters who sell direct is unknown.

mushroom harvesting while 34.5% earn between 6 and 40 % of their income from harvesting.[17]

No formal data on the sex of harvesters was collected in this survey, but from field note records the majority of those earning a significant proportion of their income from harvesting were male or working in partnership as a mixed sex couple. As with the omnibus survey, this data from commercial fungi harvesters shows great variation in the age group, frequency of harvesting and degree of livelihood dependency. However, these harvesters could also be divided into two groups: those who concentrate almost exclusively on harvesting during the season and earn a significant proportion of their annual income from harvesting; and those for whom harvesting is an economically minor activity, and who may use the income as "bonus money" to set aside for other recreational activities or put the money into a bank account for their children.

The results of all three surveys are compared in Table 10 below. Comparison across the three data sets brings out points of interest relating to three areas; age, social status and working status. The data suggests that while more of those who harvested recently in the omnibus survey are younger than those who use forests for general recreational purposes, the commercial mushroom harvesters are more likely to be middle aged or school children (harvesting as a part of a family group). Due to the differences in how the age categories were defined it is difficult to tell whether, like the omnibus (12 month) results, there were greater numbers of commercial mushroom harvesters at the lower end of the 30-60 category. The results of the opinion survey and omnibus survey on socio-economic classification shows that those who had harvested at some point in the past five years were more likely to be in socio-economic group AB, as were the those most likely to be recreational users in the public opinion of forestry survey. Those who had harvested more recently (last 12 months) were recorded by the omnibus survey to be more likely to be in socio-economic groups C1-DE.

[17] Figures for income are as a percentage of annual income and it should be borne in mind that in the north of Scotland where harvesters were interviewed, mushroom harvesting is an activity that for all but the most dedicated, is only carried out for approximately three or four months of the year.

Perhaps the most obvious indicator of economic livelihood dependence is working status. Of the commercial mushroom harvesters interviewed the majority (55.3%) were not employed (this includes retired people but not school children). Those who had harvested more recently in the omnibus survey were also more likely not to be employed. Both those who had harvested at some point in the past five years and those who responded to the public opinion of forestry survey were more likely to be employed.

These three surveys reflect the diversity of those who harvest; including those who harvest exclusively for their own use, those who harvest commercially and those in between who do a bit of both and who have varying levels of livelihood dependence. What can be surmised is that those who had harvested more recently (19.4% of the participants in the omnibus survey and all those in the commercial mushroom harvester survey) are likely to have some level of livelihood dependence on NTFPs, whether this is through commercial sale or for home consumption of products substituted for others that would otherwise be purchased.

Table 10: Comparison of three surveys of forest use

Survey	Sex		Age						Class				Area			Working status		Sample Size
	M	F	16-24	25-34	35-44	45-54	55-65	65+	AB	C1	C2	DE	West	East/ South	North	Employed	Not employed	
Omnibus Survey 5yrs	21	26	24	25	24	28	27	14	32	24	25	17	20	25	31	31	20	944[1]
Omnibus survey 12 months	17	21	20	22	21	24	20	9	24	20	21	14	16	22	23	11	17	223[2]
Opinion Survey	68	59	64		69		57		69		60		56	77	70	68	58	1000[3]
Mushroom Harvesters	-	-	23.7		13.2		52.6	10.5	-	-	-	-				21	55.3	39[4]

[1]Results are given as a percentage of the particular stratification of the total sample of 944.

[2]For comparison figures are given as a percentage of (the particular stratification of) the total sample size of 944

[3]Results are given as a percentage of the particular stratification of the total sample of 1000.

[4]Results given as a percentage of number of respondents. Age categories used for this survey were 10-20, 20-30, 30-60 and 60+

Harvesting values and activities

The surveys described above give a general impression of the percentage of people involved in harvesting in Scotland, the demographics of those involved and the extent to which harvesting is important in livelihoods. However, these surveys are difficult to use to make comparisons due to the differences in definition of classifications of age and socio-economic group, and simple lack of detailed data.

This discussion of harvesting values and activities draws on an in depth study, working with harvesters to explore the importance of harvesting and the products they use to them was conducted through two workshops. A brief introduction to this study is provided in Chapter One. Those who were involved in these two workshops were not representative of harvesters in general, but instead comprised those people committed to using woodlands: all have an interest in community woodlands, and most are involved in a community woodland group. These groups were made up of harvesters who are active in collecting NTFPs for their own use and in some cases for sale. These harvesters were therefore also interested in the economic opportunities that NTFPs might present, and in their marketable characteristics. As well as being involved in harvesting products some of the participants are also involved in eco-tourism activities utilising woodlands. These level of activity makes these harvesters slightly unusual, in that they are more likely to be interested in becoming involved in processing and setting up of new businesses than most Scottish harvesters (without access to land). The views of this group could therefore be seen to represent an extreme view of relations between people and natural resource use. In fact, as the following discussion will show, their views are largely echoed by other harvesters who do not wholly choose to adopt a lifestyle based on living in direction connection with the land. Nevertheless they can be seen to represent an extreme of commitment to those values and perceptions.

The workshops began with an activity designed to focus the participants attention on the products that they collect and use; constructing seasonal calendars to provide a systematic way to review use throughout the year. Both

the product and its use were recorded as this allowed the participants to share information on product use and harvesting. Having put together the seasonal calendars participants were invited to discuss the content. Products were then grouped roughly into categories defined by the participants. The discussion then moved on to discuss the values that the participants felt were important about the products that they harvest and use. A brainstorming exercise was used to sort these values in to categories and a matrix was used to score the product groups against the value categories using a maximum of five counters at each intersection.

The two main outputs of these workshops were illustrative diagrams: firstly, a seasonal calendar showing what products are harvested by the workshop participants, and for what purpose throughout the year and secondly a matrix showing how values associated with products and harvesting are valued against different types of products. The seasonal calendar is shown in Figure 2, all scientific names for all products named in the text or diagrams are given in Appendix Three.

What is most notable about the seasonal calendar is that it shows the range of product types and uses, the range of purposes that products have and the various ways in which products contribute to livelihoods. Secondly, a matrix showing the factors which harvesters considered to be important about their harvesting and the nature of the products that they use (Figure 3). What is notable about the calendar is that it shows the range of purposes that products have and the various ways in which products contribute to livelihoods. The data in these two outputs provides important qualitative information about harvesting and in depth analysis of its importance.

Scientific names or all species mentioned are shown in Appendix Three.

Figure 2: Seasonal calendar of NTFP harvesting (Output combined from two participative workshops with NTFP harvesters)

<table>
<tr><th></th><th>Jan</th><th>Feb</th><th>March</th><th>April</th><th>May</th><th>June</th><th>July</th><th>August</th><th>Sept</th><th>Oct</th><th>Nov</th><th>Dec</th></tr>
<tr><td rowspan="3">Foods</td><td rowspan="2"></td><td colspan="3" rowspan="2">Birch sap for wine</td><td rowspan="2"></td><td colspan="2">Sorrel</td><td colspan="3">Mushrooms</td><td colspan="2" rowspan="2">Hazel nuts</td></tr>
<tr><td>Elder-flower for fritters, cordial & wine</td><td>Slippery Jack & other early mush-rooms</td><td colspan="2">Blaeberries for preserves, immediate consumption and freezing.</td><td>Brambles rosehips and sloes for preserv-ing</td><td>Pigeon, pheasant rabbit,
Berries</td></tr>
<tr><td colspan="10">Venison</td></tr>
<tr><td rowspan="3">Craft/ Decorative</td><td rowspan="3">Willow for baskets and sculpture</td><td colspan="4" rowspan="3"></td><td rowspan="3">Birch leaves for dye</td><td>Birch bark for baskets/ craft</td><td colspan="2">Blaeberries for dye</td><td>Dried flowers/ herbs</td><td></td><td colspan="2" rowspan="3">Foliage for home decoration and Christmas markets</td></tr>
<tr><td colspan="2">Sculptural wood</td><td></td><td colspan="2">Autumn leaves for paper/crafts</td></tr>
<tr><td colspan="4">Branches for Japanese flower arranging</td><td></td></tr>
<tr><td>Eco-tourism</td><td></td><td>Courses</td><td>Outdoor Courses</td><td>Willow for basketry courses</td><td colspan="5"></td><td colspan="3">Willow for basketry courses</td></tr>
<tr><td rowspan="2">Structural</td><td rowspan="2">Small round-wood</td><td rowspan="2"></td><td colspan="3" rowspan="2">Quarried rock</td><td colspan="5">Pine needles for paths</td><td colspan="2" rowspan="2"></td></tr>
<tr><td></td><td colspan="4">Poles</td></tr>
<tr><td rowspan="2">Others</td><td>Hazel for shelters</td><td colspan="5" rowspan="2"></td><td colspan="5">Sphagnum for well lining/toilet roll</td><td colspan="2" rowspan="2"></td></tr>
<tr><td>Grazing</td><td colspan="3">Bracken for compost</td><td>Water from spring</td><td></td><td colspan="2">Acorns for seed</td></tr>
</table>

Figure 3: Values matrix for NTFP groups

Value Categories		Product groups				
		Crafts	Foods	Medicines	Fuel	Minerals and structural materials
(1) Comparisons to non wild harvested alternatives.	Sustainable	●●●●● ●●●●●	●●●●● ●●●●●	●●●●● ●●●●●	●●●●● ●●●●●	●●●●● ●●●●●
	Pollution free	●●●●● ●●	●●●●● ●●●●●	●●●●● ●●●●●	●●●●● ●●	●●●●● ●●
	Locally accessible and available	●●●●● ●●●●●	●●●●● ●●●●	●●●●● ●●●●●	●●●●● ●●●●●	●●●●● ●●●●●
	Economic value	●●●●● ●●●●●	●●●●● ●●●●	●●●●● ●●●●	●●●●● ●●●●	●●●●● ●●●●●
	Choice	●●●●● ●●●●●	●●●●● ●●●	●●●●●	●●●●● ●●●●	●●●●● ●●
(2) Intrinsic qualities.	Aesthetic value	●●●●● ●●●●				●●●●● ●●●●●
	Nutrition		●●●●● ●●●●●	●●●●● ●		
(3) Associations with harvesting.	Spiritual aspect (seasonality)	●●●●● ●	●●●●●	●●●●● ●●	●●●●● ●●	●●●●● ●●●
	A common privilege with responsibility	●●●●● ●●	●●●●● ●●	●●●●● ●●●	●●●●● ●●●●●	●●●●● ●●●●
	Health and recreation	●●●●● ●	●●●●● ●●	●●●●● ●●●●●	●●●●● ●●	●●●●● ●●●
(4) Education .	Education	●●●●● ●●●●	●●●●● ●●●	●●●●● ●●●●	●●●●● ●	●●●●● ●●

Value categories and product groups

Given the definitions of the value categories developed by the participants, some clear relationships between the value categories emerged which can be roughly defined as:

(1) Those that relate to the comparison of wild harvested NTFPs to alternatives.

(2) Those that relate to the intrinsic qualities of the products themselves.

(3) Those that relate to things associated with the qualities of harvesting the product.

(4) A more general category associated with the educational possibilities of NTFPs.

As the workshops behind these outputs aimed to identify marketable characteristics, the value groups of most significance are those that compare wild harvested NTFPs with marketed alternatives. These categories also scored highest and so are discussed first and in most detail, followed by an outline of other categories.

(1) Comparisons to non-wild harvested alternatives

Several of these categories relate to broad issues of sustainability, including the first the overarching category of **sustainability** itself, referring to the origin of products and the minimal environmental impact associated with use. The **local accessibility and availability** category is closely related to sustainability, in that the local availability of products is important because travel distances are limited. This is not only convenient for harvesters but also keeps travel costs down and has a more limited impact on the environment than commercially available alternatives that have travelled long distances. Accessibility is also important for other reasons, particularly that goods can be harvested without encountering difficulties in physically accessing land and obtaining permission to do so. Also related to sustainability is the category **pollution free**. Participants viewed NTFPs as being relatively pollution free compared to commercially available alternatives, and this was most important for those products that are consumed, such as foods and medicines. For instance foods such as berries and herbs can be obtained from sites where there is relatively little chemical input compared to those available for purchase.

Given that there were three categories relating to sustainability issues, and that all scored highly, this is obviously an area significant in the use and marketing of NTFPs. These factors also have implications in terms of where products could be sold to obtain maximum benefit from the association with sustainability. Similarly, local availability was an important factor, but in order to gain marketing benefits and keep travel distances low products would need to be sold locally.

The other two categories in this section of **choice** and **economic value**, do not relate directly to sustainability although 'choice' is significant in terms of the marketing of sustainability and a quality and as it was obviously important to participants to be able to obtain wild harvested alternatives. 'Economic value' to the harvester relates both to the sale value of products, and the avoidance of outlay on commercial alternatives.

(2) Intrinsic qualities

The category of **nutrition** is self-explanatory, relating to the nutritional value of the product. Only those product such as foods and medicines that have nutritional value were given scores here. Similarly, **aesthetic value** relates to the perceived ornamental attractiveness of the product itself. These categories both scored reasonably well for those product groups that were relevant, and it could be argued that the intrinsic qualities are seen as important characteristics of the products that participants use. In some cases both the nutritional and aesthetic values of harvested products is considered by harvesters to be superior than that of commercially available alternatives, and so to a certain extent the intrinsic qualities of the products themselves compare favourably to commercially available alternatives.

(3) Associations with harvesting

The category of **a common privilege with responsibility** emerged through discussion of the idea of NTFPs being 'free'. Many of the participants felt that though there is often no monetary exchange involved in permitting harvesting, the privilege of being able to harvest from the wild comes with the responsibility of looking after the resource and its surroundings, and therefore does have some sort of cost. Many participants harvest particular products at the same time every year, and felt it was important to maintain this personal tradition of harvesting. The **spiritual aspect** of harvesting also associated special places

with the particular product or products that are harvested there. The recreational aspect of harvesting is represented by the category of **health and recreation**, recognising that harvesting is itself a healthy activity, as well as the potential for the products harvested to have health giving properties.

(4) Education

The category of **education** emerges from the idea of NTFP harvesting being a common privilege with responsibility, and also relates to the general field of sustainability. The harvesting and use of NTFPs is used as a vehicle by some of the harvesters to educate course participants, their children and others in their local area about sustainability issues and the uses of natural resources. The importance of this category to the harvesters indicates that the current strategy of using these resources for educational courses is a sensible means of accessing both educational and income generating possibilities. Indeed, due to the payment received for educational courses, this is the only category apart from 'economic value' that can be given any sort of direct economic valuation.

Considered together, these categories, established and defined by the participants, show that the qualities of harvesting and the qualities of the products themselves are inextricable. Harvesting and products are bound together by the choices that are made to harvest and consume wild products and the qualities of freshness, local production and availability, sustainability that wild products have. These NTFP harvesters see themselves as much as stewards of the land that they obtain goods from as consumers, with a responsibility to manage their activities. Harvesting NTFPs is a way of demonstrating that link between their own lives and the land around them, and so the choice to harvest wild products is, to more or less of an extent, a statement about the way that they see their relationship with the land.

Scoring the product groups against the value categories

When the workshop groups came to score NTFP values against the product groups, the first workshop group was able to reach consensus on the scores to be given. The second workshop group reached a decision that all relevant intersections should be given the maximum score of five counters. When the scores for the two workshops were combined this resulted in some of the

variation that was present in the scores given by the first group being dulled by the second group's practice of awarding maximum scores. In practice though there was more variation in the scores awarded by the first group, the patterns of scoring were very similar.[18] As the discussion of the value categories earlier indicated, those categories relating to the comparison of products with commercially available alternatives were scored most highly by both groups. The category of sustainability scored most highly of all, and indeed, it is an overarching theme relating closely to all of the other categories.

Extending the consideration of NTFP values, the workshops also discussed the possibilities for inferring monetary value of the categories of social and cultural values that had been identified. Many of the participants had strong objections to the concept and several justifications for this emerged. Firstly there was a fundamental objection to the idea of putting a monetary valuation on resources that are out with the monetary economy for reasons of incommensurability – the impossibility of comparing money and social and cultural values with no common standard of measurement. Some of those participating in the workshops were engaged in this sort of activity as a means of escape from the monetary economy and are trying to be as self-sufficient as possible.

An additional problem was the inability of participants to conceptually differentiate between qualities associated with harvesting NTFPs, and their feelings and aspirations for woodlands as a whole (inseparability). In terms of marketing NTFPs this is unimportant, as it is the qualities of woodlands that are associated with NTFPs that are attractive to the buyer. Inferring financial value on these social and cultural characteristics is of little practical application to the participants and it would present a problem of NTFP related values being embedded within values related to woodlands as a whole.

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[18] An alternative method that could avoid this dampening effect might be to use a total budget of counters, but not to impose a limit on the number of counters that could be used for any single intersection. The second group would still have been able to share the counters equally between all the relevant intersections, but it would have also allowed the first group to give a greater range in their scores, and might have resulted in less dampening when the scores of the two workshop groups were combined. An alternative might have been to use only the scores from the first group, but the second group's choice to score all relevant intersections equally does make an interesting point. The second group considered that each of the value categories was of such importance to the relevant product groups that it could only be given the maximum score, and to discount these results would be perhaps more distorting than to include them.

Through discussion of the two workshops involving harvesters I have established that the importance of the values that harvesters associate both with the products that they harvest and with their harvesting activity. These values have been shown to be overarching, governing attitudes not just to NTFPs, but also to woodlands as a whole. Given this overarching nature, in order to discuss the diversity of harvesting activity and products harvested some categorisation would be useful.

Categorising NTFP use

The different ways in which people use NTFPs is very varied, from harvesters to buyers, processors, retailers and 'end users'. Categorising these end users is problematic, because they often have multiple motivations for their use and hence multiple uses. Harvesters themselves are often also the end users of the products that they harvest. Among harvesters, categories are particularly blurred. In analysing the diversity of NTFP harvesters, there have been attempts to classify use, such as that by (Jones et al., 2004):

Table 11: Typology of non timber forest product harvesters. From Jones et al (2004 p 23)

Harvester types
Subsistence – non-commercial harvesting for food, shelter, clothes or other necessities of life.
Commercial - Harvesting to exchange or trade for any form of payment, especially cash.
Recreational - harvesting for pleasure or exercise, typically small quantities. Includes formal clubs.
Spiritual – Harvesting as a spiritual practice and or viewing plants and harvesting locations as sacred.
Healer – Harvesting for the purpose of curing illness and maintaining health.
Formal Scientific – Harvesting or setting aside NTFP resource areas for activities based on the scientific method.
Informal Scientific – All forms of systematic inquiry about NTFPs beyond the scientific method.
Education – Harvesting in conjunction with teaching and learning, often in the form of outdoor courses.

While harvesting clearly does takes all these forms, this typology puts several different types of categorisation together that are not exclusive. The first three elements of the classification, subsistence, recreational or commercial purposes

describe livelihood purposes, which overlap with the functional purposes described in the final four elements. The other element, spiritual, is a variable which, along with other cultural variables, indicates the way in which harvesting is embedded in the harvesters lifestyle. I propose a more complex typology which interrogates the elements of harvesting activity described above using three components of categorisation: firstly relating to the characteristics of the harvest, secondly relating to characteristics of use, and thirdly relating to lifestyle. Figure 4 illustrates this typology. This categorisation is evidenced by the surveys detailed earlier and by harvester workshops, the outcomes of which are given in Figure 2 and Figure 3.

Harvesting Activity

Harvest characteristics

The type and number of species harvested, the parts harvested, quantity harvested and methods used tell us about the level of knowledge and skill possessed by the harvester and the sustainability of their harvesting activity. These factors can be regarded as indicators of the level of use, and of livelihood importance and embeddedness in lifestyle.

The type and number of species

Certain types of species require a greater degree of skill and knowledge for identification, for instance lower plants – fungi, mosses and lichens are more difficult to positively identify. In some cases these difficulties in identification can lead to a greater likelihood of harvesting rare species. Greater numbers of species harvested implies not only greater knowledge, but also a greater extent of use.

Part or growth stage

The collection of reproductive parts may threaten plant population whereas harvesting structural or systemic parts (roots, tubers, rhizomes, stems, bark, latex or resin) may threaten individual plants as well as plant populations. In such circumstances harvesters need greater knowledge of the autecology of the

species they are collecting in order to maintain the health of the plant population.[19]

Figure 4: Factors in the categorisation of NTFP use

Use Activity	Harvesting Activity
1) Functional use (to which products are put) • Curative or preventative medicine • Flavouring • Nutrition • Decoration • Cultivation • Construction material • Clothing Functional purpose, for example: • Education • Science	1) Characteristics of harvest (what is gathered) • Type and number of species • Part or life history stage • Quantity
2) Livelihood purpose (which the products fulfil) • Personal or domestic use • Subsistence - substituting for goods that would need to be purchased or otherwise. • Exchange • Gifting • Commercial	2) Methods of harvest (how it is gathered)

3) Lifestyle function
(cultural importance of the products)
• Work/life balance
• Wellbeing – mental and physical
• Environmental and socio-political principle
• Spirituality
• Ritual and tradition:
  • Religious
  • Seasonal
  • Upholding and maintaining traditions of access
	3) Temporal and spatial variables
	• Regularity
	• Duration
	Longitudinal extent of involvement
	• Seasonality
	Geographic extent of activity

Quantity

The quantity of a particular species in relation to availability gives some indication of the likely sustainability of harvesting. The quantity harvested also gives some indication of the level of use.

[19] Detailed explanations of the impacts of harvesting of different plant parts according to the plant's life history and growth stage are given by Hall and Bawa (1993).

Methods of harvest

Harvesting methods are an indication of the level of skill and knowledge of the harvester and of course relate to volumes harvested and the sustainability of harvesting.

Temporal and spatial variables

Like harvesting characteristics, the regularity, duration, seasonality and geographical scale of harvesting indicate the level of use and the way in which harvesting contributes to the lifestyle of gatherers. The longitudinal extent of harvesting is also important because it indicates whether harvesting is something that contributes more at particular life stages or is continuous throughout a harvester's life.

Use activity

Functional uses

Figure 4 gives examples of what products might be used for: medicine, flavouring, nutrition, decoration, medicine and science. However, the range of uses is likely to be much wider than this, and the division between uses can be uncertain. Consequently each of the categories given to illustrate must be taken in the broadest possible terms. For instance, nutritional relates to products that are consumed for their nutritional or culinary value, though clearly in some cases nutritional value overlaps with medicinal use – where the product has both a nutritional and medicinal qualities and may be consumed for preventative or curative reasons as well as a basic nutritional component of diet.

Scientific harvesting is done for the purposes of investigating a particular species or range of species – to study the impacts of harvesting or some aspect of the ecology of the species or its inter-relation with others. Although there is some involvement of harvesters in scientific harvesting (discussed in detail in Chapter Five) those involved in this kind of collection tend to be a distinct group. Education is given the slightly different categorisation of a functional purpose, because this tends to involve formal courses on a particular functional use of a product, and therefore is an indirect use of an NTFP.

Livelihood purposes

How products are used covers four overlapping areas varying greatly in scope. For example, as subsistence use, products are used in place of alternatives that could be obtained from commercial markets and overlaps with most forms of use, as many harvesters themselves use a proportion of what they harvest. As commercial use, products are sold in either processed or unprocessed forms. Exchange is separated from these two categorisations because it represents a different form of non-market use, with a different set of relationships to other users attached. Unlike that of Jones, McLain and Lynch this categorisation views the barter of NTFPs as different from monetary exchanges. This separation stems from the way that harvesters themselves view these exchanges. Barter exchanges largely occur between friends or close acquaintances – those who can be trusted to carry out their side of the bargain – whether this is in providing goods in return or carrying out services. Monetary exchanges can be carried out with those who may not have an immediate service or good to provide in return. While these two types of exchanges may amount to the same thing, the way in which they are used is very different.

Both the regularity of harvesting and the quantity harvested are indicators of whether products provide income to the harvester, or whether they are substituted for goods that would otherwise be purchased. The proportion of the harvesters' income that is generated from harvesting activity alone is not a sufficiently sophisticated measure of livelihood dependence. Many harvesters who are dependent on harvesting are engaged in pluri-activity, with harvesting one of several contributors to the harvester's income. Harvesting however, may also be the crucial activity that provides additional income, generated as and when it is needed, which enables the harvester to continue with their other activities and responsibilities. Similarly, the use of NTFPs, harvested by those who are cash poor but time rich may also enable the continuance of a livelihood.

Lifestyle

Work/life balance

The difficulty of classifying livelihood purpose according to commercial and non-commercial purposes is in part because this is not a distinction that many

harvesters make. Anderson et al (2000) illustrate this difficulty, showing that gatherers view harvesting as both work and pleasure even if they are reliant on the goods or income generated. To do work (whether commercial, non-commercial or somewhere between) that is pleasurable is often an important motivation for harvesting.

Wellbeing – mental and physical

Harvesting as an activity is often physically demanding, providing an opportunity for physical exercise in addition to a useful purpose. Harvesting may also be an opportunity to relax and take time out from other more stressful work and family responsibilities. As well maintaining health, harvesters may find that this is something that they can do when ill health excludes them from more conventional forms of work.

Environmental and socio-political principle

Harvesting may be carried out as a means of living by environmental or socio-political principles. Whether this is by obtaining resources locally in a way that has minimises environmental impact, the importance that they attach to where what they consume comes from and how it is produced and processed, or seeing harvesting as a means of environmental justice, by redistribution of resources.

Ritual and tradition

While some harvesting has religious significance, for instance the harvesting of holly and ivy as decorations for Christmas, some harvesting has personal or historical tradition. As one harvester put it:

> I would feel deprived; I would not have had a proper summer if I hadn't picked brambles. (Field notes, HW1)

As this harvester makes clear, this tradition of harvesting is connected to marking the passing of seasons. These traditions may take on elements of ritual, going to a specific place at a specific time with particular people to harvest a specific product for a specific purpose. For instance, a relative of mine goes on a particular walk each year with the same friend to collect berries to make hedgerow jelly. By harvesting year on year, this may also provide a means of upholding and maintaining traditions of access. Harvesting clearly can be

something that is deeply important in maintaining relations with the world around and a sense of social identity.

The typology described in Figure 4 and the subsequent discussion provides the basis for the analysis of what form NTFP harvesting takes in Scotland. This reveals the complex and layered nature of harvesting activity, conducted to greater or lesser extents for various and overlapping reasons. This means that any attempt to provide overly neat typologies flattens out the diversity and complexity found on the ground. What this typology seeks to promote is the analysis of harvesting activity on a case-by-case basis, rather than attempting to place harvesters into predefined categories. In particular, this descriptive typology reveals that the value placed on NTFPs and the motivations for harvesting are as diverse as the harvesters themselves. It is therefore difficult to place onto harvesting activity external perceptions (particularly economic) of the value of NTFP harvesting and use. Instead, it is necessary to examine exactly why harvesters are who they are. The following section will therefore explore why harvesting takes the form it does, the degree of its importance to harvesters involved and the reasons for different levels of harvesting activity.

SECTION 2: HARVESTING AND ACCESS TO RESOURCES

The previous section established the variety of uses for products, purposes for harvesting and levels of livelihood dependence and developed a framework through which to categorise harvesting activity. This section will now explore what causes the diversity previously described and categorised and what leads to such a wide variety of people becoming involved in harvesting activity. It will concentrate on the situation in Scotland but also drawing on examples for comparison from other areas. This will be done through the structured analysis of NTFP harvesting against theories of access.

This section draws on the studies described earlier in the chapter – the omnibus survey, public attitudes to forestry survey, survey of commercial fungi harvesters, harvester workshops, fieldwork notes and an additional study carried out specifically for the purposes of this thesis. I will briefly introduce qualitative data from this study before moving on to discuss theories of access. The study formed a series of interviews with harvesters, which were a major

part of a study of harvester's involvement in inventory and monitoring projects in the Pacific Northwest. Harvesters who had been contributing in some way to the inventory or monitoring of the products they harvest through one of three projects were interviewed. This case study is discussed in detail in Chapter Five and the additional material is given in Appendix Seven. The harvesters interviewed were involved to differing extents in the inventory and monitoring studies, some carrying out data collection and others being responsible for the design of experiments and the running of the project. In these interviews the harvesters would be asked about their own harvesting practice, their lifestyle associated with harvesting, their knowledge of harvesting and the extent to which that knowledge was being used in the studies. References to these interviews in the text are made by the interview reference numbers given in Appendix Two.

Access to resources

Before discussing rights based access in relation to NTFPs it is worth briefly considering the concept of rights and responsibilities, and how these impacts on the types of rights that are described by Ribot and Peluso (2003), such as legal rights, customary rights and sanctioned rights. In property law land rights are often described as giving the owner entitlement to privilege. This privilege often comes with responsibilities, a liability to be called to account for actions or in-actions such as a duty of care towards those who are invited on to the land. In practice, customary and sanctioned rights often also carry responsibility. The harvesters participating in the workshops described earlier were committed to the idea that the right of harvesting was fundamentally linked to responsibility for ensuring that harvesting activity was not damaging. These harvesters clearly felt that rights were a privilege that had to be earned rather than something that could automatically be accorded. Whilst the obligations carried legally by landowners and those felt by harvesters might not amount to the same level of acknowledgement of liability, it is worth noting that harvesters impose the conditions and strictures that go along with harvesting on themselves without the compulsion of legal measures.

Rights based access

Legal rights

Ribot and Peluso claim that there are key differences between the study of property and access:

> If the study of property is concerned with understanding claims, particularly the claims that MacPherson (1978) defines as rights, then the study of access is concerned with understanding the multiplicity of ways people derive benefits from resources, including, but not limited to, property relations. (Ribot and Peluso, 2003 p 154)

Bearing this in mind, it is necessary to explore how property rights do impact on harvesting activity, firstly through examining the legal situation in relation to harvesting in the three geographic areas studied. Three pieces of legislation currently affect NTFP harvesting.

Firstly harvesting without the landowner's consent could be considered theft under Scottish Common Law. Property law in Scotland states that everything between the boundaries of the centre of the earth and the Heavens belongs to the landowner.

> Within the boundaries of this, the owner's right to exclusive possession is in theory without limit. (McAllister and Guthrie, 1992 p 35)

Much, of course is excluded from this right, [20] but plants and lower plants (from which the majority of products harvested come) do not appear to be among them. In fact, plants are included within the parts and pertinents to land, and produce of the land becomes the property of the owner by 'accession of fruits', where produce of the land is treated as part of the land which produced it (Reid, 1996 p 457). Hence, regardless of whether harvesting is for commercial or recreational purposes the product remains the property of the landowner.

In criminal law the first piece of relevant legislation is the Wildlife and Countryside Act (1981) (WCA), and amendments to that Act in the (2004), affect all forms of wildlife, which states that it is an offence to uproot any wild plant

[20] Such as: agreements to allow the passage of aircraft, extraction of some precious metals belonging to the Crown, and often also mineral rights.

without the permission of the landowner, (section 13 1b). Fungi are not directly referred to in the WCA but may, for the purposes of this act, be considered plants. Under the WCA some species have complete protection from harvesting (including seeds or spores), disturbance and sale or possession with or without the landowners consent, and are listed in schedule 8 (section 13 1a and 2a). Post devolution, the Scottish Parliament passed the third piece of legislation, the Land Reform (Scotland) Act 2003, to address the many of elements of feudalism that were still present in Scottish land law and to update and supersede the previous legislation, the Countryside Scotland Act (1967). Accompanying guidelines enabling the implementation of the new legislation came into force in spring 2004. Although this Act makes no changes to the legality of commercial harvesting overall, it reinforces Scottish Common Law, by excluding all harvesting for commercial purposes from the right of access (2003b), therefore making commercial harvesting without the permission of the harvester a criminal offence as well as a civil one. As the majority of commercial harvesting, particularly in the wild mushroom industry, occurs without the permission of the landowner (Dyke and Newton, 1999) this legislation in effect criminalises the majority of commercial harvesters.[21] As there is no specific provision in the Act for harvesting for non-commercial purposes, the position on this remains as ambiguous as it is under Scottish Common Law.

In summary, to varying degrees of clarity all the legislation makes harvesting without the permission of the landowner illegal. Discrepancies arise in the legal position given to harvesting for non-commercial purposes, the Land Reform (Scotland) Act being the only piece of legislation that specifically differentiates between harvesting for commercial and non-commercial purposes. Discrepancies also arise in the parts of wild plants and fungi that can be harvested without the permission of the landowner, the Wildlife and Countryside Act being the only piece of legislation to specifically allow the harvesting of plants without uprooting them. Altogether, these discrepancies add up to an unclear picture of legal rights to harvesting.

[21] The impact of the process of consultation for this new legislation will be discussed later in this chapter in the sections on access to knowledge and authority through social identity.

Restrictions and Byelaws

As well as national laws, local restrictions are applied to land under some types of ownership and designation. For example, plants may not be picked from nature reserves, the property of the Ministry of Defence and the National Trust and without permission from Scottish National Heritage, sites of special scientific interest. On publicly owned land byelaws, such as the Forestry Commission byelaws forbid harvesting for any purpose. The Forestry Commission advertises a forest code that not only advises restricting commercial harvesting, but any form of harvesting stating:

> Leave things as you find them, take nothing away. (Forestry Commission, Undated)

Byelaws and restrictions are also placed on some other types of designated sites or nature reserves. Nature reserve managers often ask visitors not to harvest wild products, with the justification that the experience for future visitors will be diminished and that the habitat for wildlife will be damaged or reduced. Visual intrusion has commonly been sited as a reason for restricting harvesting – for instance where recreational harvesters have harvested every mushroom they find and identified those they wanted to keep later, discarding those they have rejected in the car park (Baird, 1998).

Harvesting for non-commercial purposes has no specific provision under either Scottish Common Law or under the Land Reform (Scotland) Act (2003b). Without entering too deeply into a discussion of property rights, this presents an interesting question in relation to property. In particular, are those things which are not specifically managed not the property of the landowner until they take on monetary value through exploitation or exchange? Historically, this is borne out by an unsuccessful prosecution brought by a landowner under the Malicious Injury to Property Act (England and Wales) 1861 (Gardener V. Mainsbridge 1887). In this case the respondent gathered field mushrooms from a field belonging to the appellant. The case ruled that as the mushrooms grew 'spontaneously' (without the management intervention of the landowner), the respondent was not guilty of causing damage to the appellant as the mushrooms did not constitute property as defined by the Act. This case

suggests that there has been a gradual accrual of property rights to the landowner for all things present on and in the land as they acquire monetary value, whether management intervention is used or not. Ross, referring to the listed definition of parts and pertinents of land observed in 1822 that:

> In Britain this part of the *tenedas* may be observed to grow in every succeeding reign, till at last the store of words was totally exhausted.... The moment a new term was invented by anybody and known, the ordinary list became immediately enriched by it; in so much, indeed that in many charters we often find repetitions of the same thing, under different words. (Ross, 1822 in Reid, 1996 p164)

As things found in or on the land became important they were listed specifically as parts or pertinents to the land. Ross is suggesting that conveyancers were covering an increasing number of possibilities in order to cover everything that might have commercial value to the landowner and hence the accrual of property rights for things in or on the land.

While harvesting for commercial purposes might in theory have been illegal under civil law for centuries, there has been customary use without the permission of the landowner. Bringing the exclusion of access for harvesting for commercial purposes into criminal as well as civil law through the Land Reform (Scotland) Act represents a substantial tightening. This hard distinction between commercial and non-commercial activity is in itself not entirely logical, as the spectrum of livelihood purpose and scales of use described earlier indicates.

The way the content of legislation impacts on on-the-ground activities is influenced by the way in which it is implemented, in itself a function of how possible it is to implement the law. In fact, all the elements relating to commercial harvesting in the legislation are difficult to implement, in part because it is difficult to prove where fungi have been harvested from, and that they have been collected for sale. Allegations of damage can only be proved if harvesters are caught in the act. As a result, there have been very few prosecutions or civil actions, successful or otherwise, relating to NTFP harvesting. It is not clear, however, whether this difficulty in implementing the law is the only factor in the low number of prosecutions for harvesting related activity (Conway, 1999). Whether this is also related to a low incidence of

damage caused by harvesting, or to a lack of awareness or concern about damage caused by harvesting among landowners, is unknown.

Conway suggests that statistical data on wildlife crime is under-reported, and that given that crimes may be committed in remote locations it may be difficult to ascertain whether a crime has taken place let alone who the culprit might be. Because of these factors wildlife crime is ineligible to be recorded in police records. In addition to these difficulties in recording wildlife crime, a police wildlife liaison officer reported that for a police force to be effective at tackling wildlife crime was an invitation to criticisms of neglect of more 'important' crimes,[22] and Conway supports this assertion that wildlife crime is accorded low priority. As this suggests, in addition to the difficulties in ascertaining where wildlife crime has taken place, there is the additional question of what is perceived to be a crime, and its perceived seriousness. While there is sufficient social sanction associated with crimes such as egg collecting and (except in some circles) the killing of birds of prey, harvest of fungi or mosses (commercial or otherwise) is unlikely to be considered a crime by most, and so reporting will consequently be low.

For a comparison with Scotland, the position in Finland is fairly similar, with an open right of access and legislation to protect specific species and habitats. In some cases there is locally applicable legislation to protect the interests of vulnerable groups such as the Sami people when a resource is particularly important to livelihoods. As in Scotland, the right of access excludes activities that would damage the interests of the landowner. These rights of access appear to be interpreted liberally, with commercial harvesting viewed in much the same way as the pragmatic approach of many Scottish landowners – if they are not going to do so themselves, they are willing for others to carry out harvesting for both recreational and commercial purposes. Open access rights extend to foreign nationals and in recent years some mushroom buyers and more recently, a buyer from Scotland have brought teams of harvesters from abroad to harvest intensively for export (Peebles, 2004). Harvesters from Russia, Latvia and Poland also come to Finland in the berry harvesting season

[22] From field notes 2003, anonymous Police Wildlife Liaison Officer in Southern Scotland.

and are able to take advantage of the open access right, without much conflict with local pickers or objections from landowners.

Access rights are more clearly defined under US and Canadian Law, and information materials are produced detailing these rights – for instance a leaflet produced by the Forest Service of British Colombia details the types of access regimes on different land ownerships and designations for wild mushroom harvesting. To illustrate this Table 12 shows access to land areas for mushroom harvesting. While these rights might appear to be clearly defined, in practice the immediate reaction to these different conditions for different areas is that it will not always be obvious what type of ownership or designation land is under. In addition claims to land may overlap, especially where there are traditional First Nations harvesting grounds in areas that are not designated as Indian Reserves. Given that commercial mushroom harvesters in the Pacific Northwest are often itinerant – moving according to weather conditions and on reports of availability,[23] the difficulty of establishing access rights is clear.

Table 12 Access to mushroom picking areas for both commercial and non-commercial harvesting

Areas	Access
Provincial Forest Lands	Mushroom picking permitted
• Indian Reserves • Tree Farm Licenses • Regional Parks • Leased Crown Land • Private Lands	Mushroom picking requires permission
• National Parks • Defence Lands • Provincial Parks • Ecological or Special Reserves • Recreation Areas	Mushroom picking not permitted

While access and harvesting rights in the US and Canada may be more clearly defined they are also often no less complex. Many types of land ownership and

[23] See for instance the message board on www.matsiman.com which harvesters from northern California to British Colombia, and inland, use to communicate about fruiting patterns as well as to share information about the reliability and trustworthiness of buyers.

designation in the US have permit or lease hold arrangements in place to regulate access to resources, with different arrangements and restrictions in place for different product types and species. As in Scotland, the difficulty of enforcing these arrangements means that high levels of evasion are common.[24] For example, in the forest in the coastal mountains of Oregon, Forest Service officials and harvesters estimated that at least 50% of moss harvesting takes place without a permit and described the lengths that harvesters would go to to avoid buying a permit entirely, or to exceed the permit's conditions. In some areas of the Southeast USA the permits are perceived by harvesters as not worth purchasing. The cost of the permit is so low compared to the value of the product and there is so little enforcement, that the perception is that the Forest Service do not value the product highly and so are forfeiting their rights to it (Hammett, 2004). Other reasons for this evasion are described in a later section on access to capital.

Customary and common rights

As the above discussion has suggested, in addition to legally held rights to access, their content and implementation, what in practice has a greater bearing on harvesting activity is the perception that harvesters have of their own rights; and equally the perception that landowners have of the rights that ownership gives them. Customary rights of access to resources are extremely poorly defined in Scotland, with rights based on tradition and reciprocity going unrecorded.

Firstly, to deal with non-commercial harvesting, interview data shows that that harvesting of NTFPs for non-commercial purposes is viewed as a commonly held right – which the legal position supports, if not explicitly. While recreational harvesting of NTFPs has acceptance in convention, government publications fall back on legal mechanisms, for instance:

> Technically wild flowers belong to the owner of the land, and taking them may be theft. (Reid, 1998)

Presumably in this case it is referring to Scottish Common Law – and the use of the word 'may' indicates the uncertainty of this position, and the extent to which

[24] See Appendix Nine for discussion of the implementation of permit schemes in Scotland.

it is clouded and overridden by customary rights. The separation of commercial and non-commercial harvesting activity in the Land Reform (Scotland) Act may to some extent be due to recognition of customary rights for recreational harvesting.

Commercial harvesting is also held by some and to be a common right for varying reasons: some harvesters feel that land cannot be held in ownership; others feel that ownership is defined by use. Those landowners who do not use or manage the product themselves are forfeiting their right to it (as illustrated earlier by the example of the US Forest Service). To an extent this view is shared by landowners who sanction access to resources, without explicit permission being given to individuals. Landowners questioned in Deeside, Speyside and the Black Isle were relatively unconcerned about the loss of potential earnings through the harvest of products by unauthorised individuals (Field notes taken during questionnaire survey of landowners 1998). This sanctioning is made on the proviso that there is no long term damage to the resource, and that they have no wish to exploit the resource themselves – or at least while they do not consider that exploiting the resource themselves would be profitable (this form of sanctioned access is remarkably similar in nature to formalised 'Everyman's Rights' in Scandinavian countries). Access more generally is also sanctioned by the provision of visitor facilities such as such as parking, toilets and interpretative information. This kind of more overt sanctioning of access does however give the landowner or manager the opportunity to make a trade off with the visitor, the provision of services in return for restrictions on behaviour to make a form of permissible use.

Alternatively, there is a subgroup of commercial harvesters who use harvesting as a form of protest in support of what they see as their right to harvest on private land Emery and Pierce (2005) see similar motivations in subsistence harvesting in the US). This position is bolstered by a sense of injustice that control of the potential benefits from the land should be inequitably distributed. Mushroom harvesters interviewed have reported using decoys for this reason. Harvesters would carry a pair of binoculars so as to appear to be a bird watching tourist and only transfer their mushrooms to the crates that make them identifiable as commercial harvesters when they are safely away from the area

where they had harvested (Field notes from interview with buyer/harvester 1998).

Whether NTFP resources can truly be considered common resources is complex, but appears to hinge on a particular issue, that of management. Many authors have sought to distinguish between Garrett Hardin's (1968) idea of common pool resources where individuals benefit but degradation is collective, and genuine, managed, common resources, where benefits and disbenefits are shared and managed (Arnold, 1998; McKean and Ostrom, 1995). In the case of the use of NTFPs in Scotland the situation is currently one where resources are customarily treated as common resources, but there is no facility for users to be formally involved in management. Harvesters not only disbenefit from any degradation due to harvesting, but also benefit or disbenefit from management actions outside their control. While harvesters have no actual rights to management, this is something that they are aware of and feel strongly about (the common privilege with responsibility described in the Harvester workshops). As the use of NTFPs increases, so do the chances of degradation and the number of people affected by management actions. These two factors make the formalising of access rights from all types of harvesters (but particularly existing users), and the management of resources, more pressing. A fair solution would be to adapt the current situation of common pool resources by formalising the management responsibilities which many harvesters' accord to their use, to a system of customary common property.

Access rights denied

Occasionally there have been reports (through wild mushroom dealers and harvesters) that access has been denied in the majority of cases, to those who are harvesting for commercial purposes. This makes a distinction between those who are denied harvesting for their own use, which is to some extent within the law, and those whose perceived rights to harvest recreationally or commercially have been denied. Access rights may also be denied by competition from other harvesters. In some cases harvesters are territorial about places where they have harvested for several years and will guard locations – either by maintaining a physical presence or by other means. In the US, in the Oregon Caves region, harvesters will hide a patch of valuable matsutake

mushrooms by harvesting the area around the patch so that it appears that either the area is unproductive, or that the entire area has already been thoroughly harvested (I & M 4). As mentioned earlier, with the low population density found in Finland, competition for resources appears to be less of an issue. While people might have favourite berry or mushroom picking sites, if one of these sites is being picked by others, or made unproductive through management changes it can easily be replaced by another.

Access rights are also denied for a variety of other reasons: for instance, the spatial distribution of resources means that those who live in areas where there is no suitable forest habitat for certain species are denied access by virtue of the physical difficulty of access. As I will explore later, most locations in Scotland are within reach of a variety of products in quantities suitable for commercial and recreational harvests.

Customary rights and legal rights coexist in a state of legal pluralism but it could even be said that customary rights are dominant given that it is primarily customary rights that are recognised. While legal rights may have the ultimate ability to sanction behaviour, in practice they are largely unenforceable and unenforced. The denial of access rights takes active and passive forms. Legal, customary and perceived rights can be actively denied, but both legal and customary rights can also be denied through physical inaccessibility.

Structural and relational mechanisms of access

In addition to access rights in terms of legislation and custom there are also processes and mechanisms that influence access to resources. These will be examined beginning with those such as access to technology, capital, markets and physical access to the land and moving on to social processes and mechanisms such as access to knowledge, authority, through social identity and via the negotiation of other social relations.

Technology and equipment

In the case of the products harvested in Scotland, the majority do not require a great deal of either technological expertise or equipment to harvest or use. Indeed, the main form of equipment that is required by harvesters is the use of a

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While the technical requirements of the majority of NTFP harvesting is very simple and by-and-large easily accessed, there are some exceptions to this, for example there is growing interest within the forest industry in extractive products. In the next 20 years there will be a surge in the production of exotic tree species such as Sitka spruce and lodgepole pine. The majority of this production will not be of sufficient quality to be used as saw logs and alternative markets are being sought for poor quality timber for which there is currently little market value. Interest in extractive products has been evidenced by a recent study commissioned by the Forestry Commission that investigated the uses of the chemical properties of extractives available from the main timber species in the UK (Watkins et al., 2003). The Scottish Forest Industries Cluster Group has also actively sought research opportunities for extractive products. The intention with these chemical products is that they could be extracted when the trees are felled, and that the harvest of such NTFPs would become a part of the timber harvest. As timber harvesting on Forestry Commission land is largely contracted in units large enough to prevent small local contractors from bidding, this use of technical processes to extract non-timber products would exclude local people from access to these harvests.

Access to capital

Access to and maintenance of equipment is perhaps the major use of capital for Scottish NTFP harvesters. Even those commercial harvesters who have a high degree of livelihood dependence on harvesting income generally have some other form of income as well, whether this is in the form of benefits or from some form of employment, and this other income can help to subsidise the set up costs of harvesting. While much NTFP harvesting as discussed above, needs little technology or equipment and therefore generates little in the way of start up costs, clearly a greater capital investment is required if there are also additional costs due to the use of machinery. It is more difficult to engage in harvesting with machinery without the permission of the landowner and consequently the harvester might also have to enter into an agreement with the landowner that involves the payment of a fee or a percentage of the sale value. These additional links in the market chain require more harvesting for the same level of income as they then need to cover the costs of the additional link as well as their own.

Access to capital might have a greater impact on whether harvesters remain as harvesters, or move into other areas such as buying and processing which require more capital to set up. Over 12% of households in Scotland do not have access to a bank account. Those most likely not to have a bank account are young households (16-24) and single parents, and those on the lowest incomes. Similarly, only 56% of households have savings and these same groups are least likely to have savings (Scottish Executive, 2002). Without a bank account both accruing savings and obtaining credit are considerably more difficult. Given that it is harvesters from the lowest income brackets who tend to have the highest level of livelihood dependency on NTFPs, these two factors present barriers to moving into buying and processing activity. As much of the commercial harvesting in Scotland takes place in the grey market, earnings from harvesting may also force harvesters to remain in the cash economy, and again consequently are likely to find it difficult to obtain credit through the banking system

In the US, capital investments have a more obvious influence on who harvests through several mechanisms. Both harvesters and Forest Service employees reported that recent immigrants and undocumented workers often had insufficient capital at the beginning of a harvesting season to pay for a permit, and so would need to do some harvesting before they could invest in a permit. Access to sufficient capital is also a major reason for continuing permit evasion – harvesters elect to 'share' a permit rather than to buy sufficient permits for the whole group, or will recycle the permit to exceed the quantity stated on it.

Access to markets

In Scotland the wild mushroom industry has grown up in a way that reflects the availability of harvesters better than the spatial distribution of the resource.[27] Buyers are concentrated in a growing cluster based around the Black Isle and the Cairngorms, with several other buyers located in Glasgow and Perth, but buying from the area where other buyers are concentrated. While there is a geographical concentration of harvesters some of the buyers will also bring the

[27] As the reasons for this form of industry development connect most closely to issues relating to buyers and processors they will be discussed in detail in Chapter Four.

market to the harvester, provided that they are able to provide a sufficient quantity of a desirable species to make the trip worthwhile.

As well as through buyers, other markets exist in selling to high quality greengrocers and hotels and restaurants. While there are country house hotels located in rural areas who will buy wild foods, the bulk of this market is in the urban centres and outside Scotland. In 1998 mushroom buyers sold the majority of their stock out with the UK and in England (Dyke and Newton, 1999). While Scottish markets have developed since this study (the turnover of most buyers has doubled in that time (Hyman, 2002; Peebles, 2003; Riley, 2003) markets elsewhere have also expanded.

With other non food products the extent to which harvesting has moved into areas where there is available resource, away from the main markets, is much greater. For instance, moss harvesting and Rhododendron harvesting is becoming much more widely reported in Argyll, though the main market for these two things is in the Glasgow area. A harvester interviewed in Tighnabruich reported that he transported cut rhododendron to close to Glasgow, where it was picked up from a dealer based in the north-east. Harvesters are becoming increasingly aware that they can improve their profits by selling direct to dealers at the Glasgow flower market rather than selling to middlemen.

Physical and topographic factors

In Finland the population is mainly concentrated in the south, leaving large areas of the north of the country sparsely populated and therefore difficult to access for the majority of the population. In the Pacific Northwest populations are again concentrated, and like in Finland large distances are an impediment to accessing forests away from centres of population. The topography of the ground influences the accessibility to the harvester and the equipment that they might need to access the resource. Both the access to technology and access to capital sections discuss the reliance of harvesters on vehicles to access resources, and in the more extreme the terrain, the more expensive or specialised the vehicle that is required.

While resources may be present, whether they are available for harvesting depends on competition from other harvesters, which in turn is influenced by the physical accessibility of products, how close they are to centres of population, and to transport infrastructure. In areas such as the Black Isle, where at least four mushroom buyers operate, competition between pickers is an issue. This concentration appears to be due to the availability of harvesters (as discussed earlier) rather than any topographic or physical advantage.

While the majority of Scotland's population has the ability to access woodlands, the availability of resources within woodlands is another matter. The tree species and age composition of woodlands has a strong impact on the presence, abundance and diversity of products available within a woodland, as does the management regime (these factors are reviewed in greater detail in Chapter Four). Where woodland is located within the country also impacts on the availability of products, through a complex web of site and species specific factors including the underlying geology, rainfall, light, temperature and those which result from the presence of other plants, such as microclimatic effects and competitive and symbiotic relationships. The impacts of policy on the location and species makeup of woodlands are discussed later in this chapter in the section on access to authority and decision making power.

Most harvesting is physically demanding, whether requiring heavy loads of foliage to be carried across rough terrain, or continuous stooping to look for and harvest fungi or berries. However a large proportion of those on benefits interviewed in the commercial mushroom harvester study (1998) were on sick leave, some with physical ailments and were using harvesting as an opportunity to supplement benefits and to do something they felt was therapeutic.

Access to knowledge

Harvesters are limited in the range and quantity of products they collect by what they know to be useful or profitable. These types of knowledge can be divided into those relating to efficient harvesting and processing practice, to sustainable harvesting practice, and to market knowledge relating to the marketing of products. Harvesters develop knowledge about the uses of products, where they are found and the autecology of the products they use such as fruiting or

growth patterns in several different ways: either re-learned from books and other sources of documentation or as a result of traditional knowledge passed on through the generations, or in some cases through practice based means generating 'new expert knowledge' about products.

Traditional knowledge

Traditional knowledge in Scotland appears to have experienced something of a generational gap, with traditional knowledge being re-learned several generations on by an educated generation who are more reliant on books than on elderly friends and relatives. As the interest in wild harvested products grows, so this knowledge is mined for new products and uses. Indeed, there has been a proliferation of books that tell us how to make use of our lost plant lore such as Jordan's 'The Green Mantle' (2001) - a study which does not address the reasons for the loss of knowledge but attempts to rediscover use. These books harness written records of plant uses, and the knowledge of the proportion of the population who continue to use wild plants, to feed the nostalgia for times when people were more closely tied to the landscape and perhaps to educate and remind the city dwellers of the way they could live. Given that that they make little attempt to address sustainable harvesting perhaps it is with little expectation that people will make use of this knowledge. Publications include books specific to Scotland (Dickson and Dickson, 2000; Walker, 2003) which implicitly place plant use firmly in the past.

Richard Mabey, in contrast, introduces his 'Flora Britannica' with an evocation of just how important wild plants *still* are to us:

> In Britain, wild species have an even more central role in national and local cultures than those from gardens. We pick sprigs of heather for luck, munch blackberries in autumn, remember Wordsworth's lines when the daffodils are in flower, and link hands round threatened trees. Our children still make daisy chains, whack conkers, and stick goosegrass stems on each others backs. Despite being one of the most industrialised and urbanised countries on earth, we cling to plant rituals and mystical gestures whose roots stretch back into prehistory: holly decoration for the winter solstice, kisses under the mistletoe, the wearing of poppies to remember the casualties of war. (Mabey, 1996 p 7)

There has undoubtedly been a reduction in reliance on wild harvested products, particularly as staple foods or means of obtaining nutrients that are not available

from cultivated products – such as the use of nettles as a spring green to provide vitamins that have not been available over the winter. There has however been a continuing tradition of using plants for decorative and craft purposes. While floral greens and decorations for the Christmas market are not particularly in evidence in formal markets, their use in rural areas is widespread. Craft uses of some products have remained a strong tradition in some areas, such as the use of lichens for dyeing wools used in Fair Isle knitting in the Orkneys and in those areas the handing down of traditional knowledge remains important.

New expert knowledge

The generation of new expert knowledge is most striking and obvious for products where a market or use has only recently been established. Harvesters themselves often recognise that they have this knowledge, though their systems are formalised to different degrees. At one extreme is, a mushroom harvester from the Oregon Caves region in southern Oregon, who has systematised his observations of matsutake fruiting patterns to such an extent that he has been able to develop a model to predict the altitude and aspect of sites that will fruit according to weather conditions in the preceding months and has made this model available for public use on his website (www.matsiman.com), and so shares his expert knowledge (I & M 4).[28]

Other harvesters use their knowledge more furtively, to identify which sites will be productive, and to get to those sites ahead of others. In 1998, when the research on commercial mushroom harvesters was conducted, only those harvesters who were very active had become aware that in some cases plantations of exotic conifers could be extremely productive for commercial fungi species, and were using this information to harvest large quantities. These harvesters have not simply overcome a generational gap in harvesting knowledge, but have generated new knowledge to go with new products and markets.

[28] Moore argues that he would like to be able to educate harvesters so that they would be very efficient at harvesting. Productive areas would then be quickly and efficiently harvested, leaving little behind. As a result harvesting as a means of making money quickly and with little regard for sustainability would no longer be viable (I&M 4).

In the US in some sectors the majority of harvesters are recent immigrants – from Central America or the Far East. It has been suggested that these harvesters bring the knowledge of harvesting from home to influence practice, and the choice of products in their new home. Some cases, such as the harvesting of fiddleheads (young ferns harvested before the frond has opened out), does fit with products that would have been harvested by Asian immigrants at home. Similarly, the majority of the commercial harvest of the matsutake (*Tricholoma magnivlare*) is exported to Japan, in place of a similar, but more highly prized species (*Tricholoma matsutake*). Hansis suggests that immigrant harvesters in the US see the forests of the Pacific Northwest as providing income through NTFPs and to a lesser extent also providing subsistence products that they had previously used in their countries of origin (Hansis, 1996; Love, 1991 in Hansis, 1998). In practice therefore though harvesters may be familiar with some of the products that they harvest, those that are harvested for commercial purposes may be new to them. Any knowledge that they have of harvesting and the ecology of the species harvested has been built up in the course of a single generation. In recent history several waves of settlers and migrants have come to Scotland, particularly from Eastern European and Italy. The expansion of the EU is currently increasing the pool of experienced harvesters arriving in Scotland as migrants or visitors and undertaking the sort of opportunistic harvesting as fisherman from Russia arriving in west coast ports currently do. Some of the descendents of these settlers now use the knowledge of harvesting that their predecessors brought with them to harvest in Scotland, either for their own use or in the case of one individual interviewed in 1998 to supply his own restaurant with wild fungi.

Traditional ecological knowledge has recently gained visibility and credence, partially through the struggle for the intellectual property rights of indigenous communities as traditional knowledge is used to commercialise and exploit flora and fauna particularly for medicinal uses. An increasing body of literature resurrects and authenticates traditional ecological knowledge as it passes from oral to written culture, making it available to a popular audience. In the UK from the 1970s books like Richard Mabey's 'Food for Free' (1972) have popularised this knowledge. The publication in 1996 of 'Flora Britannica' by the same author indicates the acceptance that traditional ecological knowledge has gained.

Traditional ecological knowledge has gained acceptance in part because of its longevity, which in turn appears to devalue the new expert knowledge that harvesters are gaining.

Indeed the knowledge of harvesters does often appear to be devalued or ignored. In 2003 Robin Wall Kimmerer, an academic with First Nations roots published 'Gathering Moss: A Natural and Cultural History of Mosses'. This book has a chapter entitled 'The Bystander' in which the author describes the moss harvest in the Oregon coast range in highly emotive terms. These mosses have very slow growth rates and an inability to re-colonise the slippery bark – the moss needs to grow with the trees. However the blame for damage is placed on all commercial harvesters.

> I imagine them sticking their dirty hands deep into the mat and ripping it off in swaths the length of their arms. It gives me shivers to think of that tearing, like a woman stripped naked before her attackers. (Kimmerer, 2003 p 152)

Interestingly, Kimmerer uses both her background as a scientist and her ancestry as a Native American to give her knowledge legitimacy.

> The knowledge I have of plants has come from many sources, from the plants themselves, from my training as a scientist, and from an intuitive affinity for the traditional knowledge of my Potowatomi heritage. (Kimmerer, 2003 p vii)

In this scientific and indigenous knowledge is constructed as essentially 'good' and new expert knowledge non-existent. This raises a second difficulty in the acceptance of the cultural legitimacy of new expert knowledge in that it does not come from a clearly defined ethnic group in the way of indigenous knowledge. Contrasted with these badges of legitimacy, a moss harvester interviewed at Hebo, who was able to identify regeneration rates for mosses in different habitats and modify his harvesting practice accordingly, was given little opportunity to share this knowledge in the study he was participating in. In the same way, while there clearly are harvesting practices that are damaging there is also a clear lack of willingness in the scientific and conservation worlds to accept that harvesters might understand the impacts of their actions, and might too be engaged in management. The main motivation for using a harvester to

collect data for the study was that it would be the only way that collecting data over a long period of time could be made cost effective. The idea that the harvesters knowledge could contribute to the study did not seem to have occurred in the design of the research, though the harvesters' ideas of what represented a fair approximation of harvesting activity were taken into account. Either it was assumed that despite his many years working in the woods as a moss harvester that he would not have accumulated knowledge that would be pertinent, or that this knowledge would not be a valid part of the scientific investigation.

There clearly are harvesters who are motivated by the need to make quick money (no one could say that dragging heavy sacks of moss up and down the slopes of the Oregon Coast range, overgrown with brambles and salmonberries is easy money), and do so with little regard for the ecology of the forests. However, there are also harvesters who feed market demand for fresh greenery and have been doing so for decades, who have detailed knowledge of the regeneration rates of different species and who want to continue to harvest. For example, a harvester interviewed in the Pacific Northwest understands the regeneration rates of mosses on different tree species, and the different qualities of moss that are found. However, he also understands that buyers have little regard for these things.

> On hemlock it (moss) grows at lot faster than it does even on alder. It's not as good moss as alder, because alder is clean. Under hemlock you got needles. But like I say they'll buy it anyway. (I & M 1)

In Finland, by way of comparison, there have been some efforts to add to traditional knowledge and allow harvesters to develop new expertise. State sponsored education programmes for harvesters have been used in Finland since 1969 (through the Department of Forestry Education of the National Board of Forestry) with attempts to diversify the number of fungal species being harvested. Later courses were also introduced for wild herbs and berries, in 1984 and 1987 respectively (Härkönen, 1988). These courses were started with the intention of making better use of the rich resources of Finland's forests. Although over 100 edible species exist in Finland's forests only a handful have

been harvested traditionally (the growing export market to Italy and Germany has since helped to expand the number of species used).

The programme aims to provide every commune in Finland with a mushroom advisor, trained by academics in national forestry schools and who would then return to their commune with a certificate as a commercial mushroom advisor and could in turn teach others. Those who attend these local courses receive a commercial mushroom harvesters' certificate verifying that they are able to identify, harvest and prepare for sale named species of mushroom. Some buyers demand that harvesters hold these certificates, though those interviewed did not. A course on herbs was designed to establish an industry for domestically collected herbs, and the course on berries to revive flagging exports (according to Härkönen this was due to the low quality of Finnish exports, but must also have been influenced by the availability of cheaper imports from the former USSR and Eastern Europe). Through these schemes, Finland's NTFP harvesters are provided with the opportunity to increase the diversity of the products that they harvest, although it could be argued that the knowledge that they are offered is limited to that which the course tutors and the authorities deem to be relevant.

Access to authority and decision making power

As the previous section demonstrated, the knowledge that different groups hold is accorded different levels of authority. Additionally, in many ways this level of authority is as important, particularly in terms of the level of influence any group or individual has, as the knowledge itself.

For example, an anonymous UK based harvester who runs a website selling wild crafted goods talks about the relationship between conservation and harvesting, and the perception that harvesters are assumed to all fall in to the lowest common denominator of harvesting practice:

> An air of moral outrage hangs over gathering.[29] No year passes without lurid press reports of gangs ripping up precious bogland mosses and wildwood flower corms. The assumption is that gathering is wrong – is yet more proof of the heinous activities of irresponsible rural people. This justifies the need for an educated elite to oversee and curtail the activities in the countryside so for a start appreciate these stories as propaganda. Conservation is big business. (Anon, 2003)

Criticism of harvesters comes as much from rural dwellers as from those who live in towns, and is as frequently directed towards perceived ignorant townsfolk who harvest without knowledge of species or sustainable harvesting methods (Cairns, 1999; Reynolds, 2003b; Smith, 1996). The proliferation of codes of conduct put out by professional bodies (the English Nature Wild Mushroom Pickers Code of Conduct,[30] and the Botanical Society of the British Isles Code of Conduct for the Conservation and Enjoyment of Wild Plants (Botanical Society of the British Isles, 1999) gives some indication of the level of concern about the impacts of harvesting activities, and as the anonymous commentator says, the need that professional conservationists feel to impose control on harvesting.

As mentioned earlier in the section on legislation, the levels of reporting of wildlife crime are low, and the levels of social sanction vary for different crimes. Much of the literature produced by conservation agencies attempts to instil social responsibility about harvesting wild products through recommending a blanket ban on harvesting backed up by conservation messages. The harvester is assumed to have limited knowledge: firstly of the rarity of the species they are picking; secondly of basic reproductive biology, and thirdly is assumed to be unable to make judgement about how much can be harvested without damaging

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[29] Firstly, this harvester's choice of the word 'gathering' to describe his activities is interesting. Gathering has softer connotations than harvesting but also has both positive and negative implications about the knowledge the collector possesses. Gathering does not indicate that the collector had such an active part in the process of producing the product as the word harvest does, and therefore suggests less knowledge of management. Gathering however also suggests a greater knowledge of the presence of products to be collected with connotations of traditional knowledge (hunters and gatherers). Harvesting, alternatively, suggests a more formalised process than gathering, and perhaps one less in sympathy with the land. The term 'picker', which is also used to describe collectors, has no connotations of either knowledge of management process or of the conditions in which products are found. The term harvester is most commonly used in this study to indicate the purposefulness with which harvesters carry out their activity, and the knowledge that most hold of the impacts of their activities, and the management that some engage in. The term collector is also occasionally used as an alternative, neutral term.

[30] The name of this code "the wild mushroom pickers' code of conduct" implies that this code is for and of harvesters, when in fact no harvesters were involved in its creation. Admittedly, the code does also issue guidelines for scientific harvesting, foray leaders, and land managers, about which those involved in its creation, can claim to have more authoritative knowledge.

the plant's reproductive potential. For example Scottish Natural Heritage's guide to wildlife law suggests that:

> Wild flowers should not normally be picked. The flowers are an essential part of the reproductive cycle and picking flowers may prevent the plant from setting seed and surviving into the future. (Reid, 1998)

Such prescriptive guidelines clearly assume that harvesters do not have relevant biological knowledge and do not provide harvesters with avenues through which to share or demonstrate knowledge. A contrasting approach was taken by the Scottish Wild Mushroom Forum, which was formed in 1999 to address the growing conflict over wild harvesting of wild fungi. The forum consisted of representatives of landowners from the three main areas where harvesting was taking place – Speyside, Deeside and the Black Isle – along with representatives of conservation and landowning bodies, mycologists, mushroom buyers and harvesters and was facilitated by myself. The intention of the forum was to bring these representatives to agree a code of practice for harvesting activity. Most importantly all harvesters had the opportunity to show conservation organisations and landowners that they were more aware of the impacts of their harvesting than the conservation organisations themselves.

In the light of these contrasting approaches to consultation and access to decision making process it is worth looking at the question of access in the context of the most significant piece of legislation affecting NTFP harvesting, the Land Reform (Scotland) Act 2003.[31] The first consultation was carried out in 1998, in the main through an Access Forum, made up of bodies and organisations divided into three categories: firstly recreation bodies, secondly land management bodies and thirdly public bodies. None of these bodies represent the interests of harvesters.

A further stage of consultation and many revisions refined the exclusions to the right of access from a complete ban on extractive uses:

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[31] The public consultation process for the Land Reform Act began in 1998 at about the same time as the I was researching my MSc dissertation on wild mushroom harvesting and subsequently in 1999 when SNH agreed to part fund the Wild Mushroom Forum is was in part with a view to this new legislation that the a code of practice was made. The code was intended to pre-empt any changes that the Land Reform Act might make to access rights to harvesting of natural resources.

Taking away anything in or on the land (Section 5.4(e)) (Scottish Executive, 2001)

To a ban on commercial activity (Scottish Parliament Information Centre, 2001) to a ban on extractive commercial activity, but not on non-extractive commercial uses such as guided walks.

Having been passed with this exception there was a final stage of consultation on the accompanying Access Code. Again this consultation was circulated through normal channels, to those who had responded to previous consultations, relevant organisations and through availability on the Scottish Executive website. In formulating a response to this consultation, Reforesting Scotland involved a network of researchers, landowners, buyers and some harvesters. Without the resources at the time it was impossible to involve a representative group of harvesters, as there are no pre-existing harvester groups who can be called upon to respond. Given that the legislation was already passed the response had to concentrate on how it would be implemented, and there was concern among many that the legislation had been brought in with no provision to deal with the changes to the legality of harvesting that had been made. This time a total of 1362 responses were made to the consultation (40% of responses to the final consultation were from landowners, considered in detail in Chapter Four). In its analysis of the responses Scottish Natural Heritage failed to make any specific references to the need for guidance on management of access for commercial harvesting (Scottish Natural Heritage, 2004b), though a special report detailing responses on the implementation of the access legislation, the section on site management mentions the need for the production of advisory materials on the practical aspects of implementing the new legislation (Scottish Natural Heritage, 2004a).

This long and complex process of consultation over the new legislation illustrates just how excluded harvesters have been, and how these new rights and responsibilities are being imposed on them. The Scottish Executive and Scottish Natural Heritage have been responsible for the process of consultation and have failed to take into account the interests of a significant group.

Commercial harvesters, despite the direct impact that the legislation is likely to have on their lives, do not have the necessary access channels through which to be informed and channels to them have not been opened by the process. As a direct result, commercial harvesters have been excluded from the right of access by their lack of knowledge of the existence of the process; and by their lack of access to the authority that would have enabled them to influence the process. The results of this exclusion are not yet known but could impact on a significant number of rural livelihoods and also on harvesting practices. Responsible harvesters may be discouraged, leaving those who are more willing to engage in unsustainable harvesting practices and driving the industry further into the black economy.

Just as harvesters have been excluded from the process of consultation on the Land Reform Act, they have also made self-imposed restrictions on the access that authority has to them. When researching commercial mushroom harvesters an initial barrier that had to be surmounted in order to gain the trust of harvesters was to assure them that I had no connection to either the Benefits Agency, or the Inland Revenue. The wild mushroom industry and most other commercial harvests are at the point of sale from harvester, a cash economy. My 1998 research with commercial mushroom harvesters showed that without exception, the income that they received from harvesting went undeclared.[32] The buyers themselves have introduced systems of recording which enable them to show proper records of cash transactions, and therefore protect their own interests.

Similarly, harvesters interviewed throughout the course of this study have been unwilling to make their presence known to landowners. Despite the evidence that, once they are aware of the limited earnings that most harvesters have, landowners are more interested in knowing what is going on on their property than preventing access to harvesters (Dyke and Newton, 1999), harvesters are unwilling to risk the possibility of being refused permission. Harvesters' efforts to hide their activities from government organisations and landowners also had the

[32] The harvesters' suspicions about the interest of the authorities in their activities are not without grounding. The hidden economy unit of the Inland Revenue has recently taken an interest in several wild product buyers – and the focus of their interest has been the harvesters rather than the buyers themselves (Ralston, 2003) this is discussed in more detail in Chapter Four.

side effect of making themselves invisible when it comes to legislative changes that may impact on their lives. This choice has been made without the knowledge of what the consequences might be.

In contrast, in Finland harvesters are in a relatively good position, with free rights of access and customary rights through the implied consent of landowners that harvesting activity does not damage their interests (Finnish Ministry of the Environment, 1999). Similarly in Sweden a public right of access allows individuals to take wild berries, flowers and mushrooms (although not to take branches or twigs from living trees) from private land (Swedish Environmental Protection Agency, 2003). Finnish harvesters are also in a good position because earnings from goods harvested from the wild are not eligible for tax. This measure is specifically designed to encourage people to stay in rural areas and slow down the depopulation that has been occurring. Both the tax position and the open access right make the industry easier to monitor and more open to authority.

Access to authority impacts not only on how accessible the landscape is but also on the availability of resources within the landscape. Forestry policy has shaped the location, species make up and structure of forests through both the impacts of policy on public forest land and through grant schemes and tax concessions on private land. In turn the management of the woodland influences the tree species and age composition and the presence, abundance and diversity of products available within a woodland.

Harvesters have little opportunity to influence the form that the forests around them take, or how they are managed: they generally have little contact with landowners, and little contact with the world of forestry. Indeed, the harvest of NTFPs largely takes place outside the mainstream world of forestry. Harvesters interviewed expressed frustration that they would return to a favourite site to find that it had been felled, and would be lost for decades before the replanted or regenerated trees had reached a stage where the habitat would be suitable again.

In Finland harvesters also commented that the species they harvested and marketed changed with alterations in management practice affecting the species they had previously harvested. This was not expressed with regret or frustration however, but simply that they would find a new site and harvest there as conditions changed. In the case of the area around Joensuu, where chanterelles were once abundant, changes in management practice meant that chanterelles were no longer so common. Harvesters had instead turned to collecting boletes. It is probably an indication of just how low competition for resources is in Finland, that harvesters are unconcerned about having to find new sites.

In Scotland, landowners will not make management decisions such as delaying timber harvests from an area where a lucrative or useful mushroom is found in abundance without some commensurate gain. Likewise in Finland harvesters have little contact with the landowner and in any case can move on to a new site. At present harvesters have no means of influencing the management decisions the landowner makes, directly because there is rarely any gain for the landowner. Rights do carry responsibilities, which most harvesters respect, taking care to harvest in non-destructive ways safeguarding the resource in a way which is not done in the harvest of timber, where the disturbance of the ground and removal of host trees will likely destroy the mycelium of mycorrhizal mushroom species and remove the food source for saprophytic fungi. The impact of management decisions on the availability of products will be discussed in greater detail in Chapter Four.

Access through social identity

Having raised the importance of lifestyle and the way in which harvesting is embedded in gatherers lives, the importance of social identity in harvesting must take two forms, both in terms of how harvesting shapes the identity of harvesters and how harvester's social identities are reflected in their activity.

Perhaps the most important factor that governs harvesting activity through social identity is the amount of time that harvesters devote to carry out harvesting. The availability of time is governed by the harvester's lifestyle choices, but also more prosaically, the need to earn income from other sources

and responsibilities such as caring for and managing a household. The flexibility that these other responsibilities allow also influences the amount of time that can be spent harvesting. In turn, commercial harvesters often mention the flexibility that harvesting offers them, and its ability to fit around their other responsibilities and commitments – particularly child care.

Across a range of research, the survey of commercial mushroom harvesters, the Scottish Executive omnibus survey and the harvester workshop – harvesters are revealed to have very different levels of dependence on harvesting for income and to provide goods for household use. An important subgroup of these harvesters use the income from harvesting or the goods themselves to supplement their income or as an alternative to other sources, whether this is from full or part time employment.

Additionally, harvesters may be excluded from more conventional forms of employment by a variety of causes. One reason identified in both harvester workshops and though interviews with commercial harvesters is that they have voluntarily excluded themselves from more conventional forms of work and may identify themselves as unsuited to the strictures of employment. Many of those in the harvester workshops have chosen to make their living in a way which relates to the land and actively seek to obtain as many as possible of the goods that they use in their everyday lives from the land around them.

Harvesters may need to work in a way that gives them freedom and flexibility in order to carry out other responsibilities – again particularly in relation to childcare or other caring responsibilities. This is a form of involuntary exclusion by lack of opportunity for other forms of work that will give them that flexibility. Both of these examples show how harvesters have built up a social identity that in the first case binds their harvesting activity up with their lifestyle, and in the second case, makes harvesting an attractive proposition because of their lifestyle.

Harvesters are also in some cases involuntarily excluded from conventional employment by other means. Of those commercial harvesters interviewed (though it was not recorded specifically in the survey) a significant proportion of

those recorded as in receipt of benefits were on some form of sick leave. Although the reasons for this varied (those who revealed reasons had back problems and depression) all were excluded from work and the majority for the long term. In some cases the harvesters saw their activities as a form of therapy: work that could be done outside, alone, without the pressure of dealing with colleagues, customers or deadlines and providing an opportunity to think. Others saw harvesting as an opportunity to regain some dignity, to supplement their benefits and to feel they were providing for themselves. Harvesters may also be unemployed through lack of available work at a suitable skill level may also exclude harvesters from conventional work.

Other areas of the regulation also affect who is harvesting and the level of livelihood dependence they have. In the US employers have the right to impose compulsory drug tests on their workers, and many of the larger minimum wage employers will do this. As a result it is virtually impossible for people with drug addictions to hold on to conventional employment, regardless of their ability to do the work that is required of them. While it has not been investigated in depth, both harvesters and researchers interviewed in the course of the I & M study commented that there were harvesters with drug addiction problems who used harvesting to make a living and to pay for their drug consumption. Harvesting was seen as a flexible way of making a living that could be done when income was required.

The social identity of harvesters also affects their ability to access resources: by handing down knowledge through their families; and the access they have to documentation of information on products and harvesting methods. Immigrants who came to Scotland from Poland during and after the Second World War, and who came to Scotland from Italy several generations ago, have used the knowledge of harvesting they brought with them to maintain cultural traditions (Stamm, 2003). In some cases this has meant that cultural interpretations of

edibility have also been imported, and a wider range of species are consumed than have traditionally been consumed in Scotland (particularly fungi).[33]

As discussed earlier it is possible to identify how the tradition in the use of wild products is being revived as a written culture, with traditions that would have been handed down as a part of an oral culture instead being recorded in popular books which could be argued are accessed by a different sector of the population than the descendants of the last users of NTFPs (Peebles, 2004). The membership of Reforesting Scotland is perhaps an example of this type of new user group: forming a well-educated, largely middle class, and largely urban audience with interests in the countryside and the possibilities of living a life more in harmony with their environment. There is also a developing, again largely urban, mass audience, for culinary products. Media interest in NTFPs and the publication of cookery books has been growing in recent years, with high profile publications by chefs such as Antonio Carluccio, Nick Nairn, Marco Pierre White and Hugh Fearnley-Whittingstall all featuring wild food in their restaurants and publications (Carluccio, 1989, 2003; Fearnley-Whittingstall, 1997; Nairn, 1996, 1997; White, 1994).

As identified earlier, one profile that emerged from the omnibus survey results for the past five years, is of the middle aged, middle class woman, working at home, who harvests blackberries to make jam each year, or picks holly and ivy to decorate their house at Christmas. This kind of user is undoubtedly important in maintaining the kind of traditions (mentioned in the section on access to knowledge) that Richard Mabey describes in 'Flora Britannica' (Mabey, 1996) as being informed by popular ecology and social history. All these types of social identity for NTFP use are also important in redeveloping our relationship with plants.

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[33] Roman and Boa also mention cultural interpretations of edibility in their paper on collection of wild edible fungi in Spain (De Roman and Boa, 2004). To give an example of: Gyromitra esculenta, the false morel, is one of the main traditionally harvested species in Finland. In order to be consumed the mushrooms must be boiled for ten minutes, the water changed and then boiled for a further ten minutes. In the UK these mushrooms are regarded as poisonous despite this treatment. In the US between 36 and 86 cases of gyromitrin poisoning were reported annually between 1996 and 1999 (Emedicine, 2003). Given the amount that is consumed annually in Finland it would be logical to assume that large numbers of Finns die annually of renal failure, but this does not appear to be the case. Apparently metabolic differences in the way that the chemical gyromitrin is broken down are responsible for varying levels of sensitivity in individuals. Some other species traditionally consumed in Finland must also be treated in the same way as Gyromitra, perhaps leading to greater acceptance of processing in order to make species edible than would be tolerated in the UK.

A fourth recognisable social identity for NTFP users who have not yet been mentioned, but who are an important and visible subgroup of commercial harvesters, are the travelling people. Settled travellers on the Black Isle are important in the wild mushroom harvest, and other groups of travellers who I have come upon by chance intersperse harvesting wild fungi and plant products with other wild harvesting, particularly of cockles. These groups use their networks of contacts to sell the goods on, and to identify new harvests.

Access through the negotiation of other social processes

Social identity also plays a role in terms of sanctioning or allowing access to certain groups or individuals through links to a geographical area, or historical connections. Ribot and Peluso describe this as access through the negotiation of other social processes. For example, harvesting and access rights for some products, particularly seed and firewood collection are often negotiated as a part of another management activity. For instance the right to collect seed is granted by some landowners in return for a proportion of the seed grown on as seedlings. Firewood collecting rights might be given in return for thinning or brashing, or simply keeping things tidy – making sure that fallen timber is cleared off paths and that new planting or regeneration is free of weeds. Use is sanctioned through these negotiations in a way that is fairly transparent. Sanctioning of use by proximity of dwelling, either on land belonging to the landowner or close by is less clear. Landowners surveyed in 1998 often reported that they did not mind locals harvesting on their land, and under further questioning it often emerged that this was because they knew the people, and knew what they would be doing, whereas strangers were treated with more suspicion. Therefore use that appears to be sanctioned on the basis of geographical locality is in fact sanctioned on the basis of trust. A landowner would not even have to know a local person personally to trust that they would be unlikely to cause damage either to what they were harvesting or to other species or fences in getting in and out. Social pressure from other local residents who would like to maintain access rights would be enough deterrent.

Those harvesters who were involved in the Inventory and Monitoring (I & M) projects studied in the Pacific Northwest tended to be those who had built up a

relationship with the agency that was running the project over a long period of time. As one harvester said:

> The reason for my involvement, two reasons or maybe three reasons. One I enjoy it. I'm retired, but harvesting moss I enjoy it, simply that. Two I've been working with the Forest Service for a long time, they have been decent to me. Third and probably most important to me was to make moss picking available for my kids and grandkids. (I & M 1)

For this harvester, working with the Forest Service now was a way of repaying some of the good relations that had been built up in terms of the Forest Service offering flexibility over the terms of permits as trust had been built up with the harvester. The forest service employees in turn were confident that the terms of the permit would not be exceeded, if for instance, extra time was given. Those harvesters who were involved with these I & M projects were not, however, typical of harvesters as a whole. Harvesters tended to be of European descent and settled in the area over a long period, unlike the majority who were of Asian or Central American descent and recent immigrants. Social relations had been built up over a long period, sharing in the same local area and children growing up together and attending the same school. In other cases harvesters had become involved in research because the development of their own interests had led them to seek out opportunities to become involved science and management in order to do learn more.

As well as social identity playing a part in the sanctioning of access, social identify also plays a part in access beyond what is sanctioned. A subgroup of harvesters actively seeks to gain from land belonging to others, because they see it as their due. This group sees the land as being unequally distributed so they will make it their business to do a little redistribution of their own by harvesting commercially.

Social identity therefore impacts on harvesters' choices about the level of harvesting activity they engage in and the extent to which they become involved in management activity, through influencing their access to other forms of work and their own lifestyle choices. Social identity also influences the negotiation of access to resources, particularly when negotiating exclusive or unlimited access.

The social processes influencing the ability of people to access NTFPs in this study are rarely brought to a head through escalating conflict, but instead are subject to slow change to fairly entrenched positions. While these processes may not have sudden impact on the lives of people accessing natural resources, the extent to which choices are influenced is ingrained and subtle, often giving the appearance that there may appear to not to be a choice to be made.

Structural reflection on Ribot and Peluso's framework

The previous discussion explored why NTFP harvesters in Scotland are who they are and do what they do. This analysis has been structured through theories of access, using the model developed by Ribot and Peluso. Before moving on to provide a summary and reflection on the material presented here, it is worth considering the successes and limitations of the framework itself and how it, in itself, might direct and shape findings.

In their theory of access Ribot and Peluso divide access factors into rights based access and structural and relational mechanisms of access, additionally breaking up some important mechanisms into component parts. Having applied this structure in practice in order to avoid repetition, some points have to be inserted under one heading, rather than the two or more they might fit in. In order to accommodate these points the framework has been stretched in some areas and compressed in others and this has served to dilute the overall impact of individual issues. For instance, the influence of the exclusion of harvesters from conventional forms of work takes many forms:

- Voluntary exclusion to take up a form of work with more individual freedom, or to fit with a particular lifestyle or worldview.
- Involuntary exclusion by lack of opportunity such as availability of work at a suitable skill level, or with sufficient flexibility to fit around other commitments.
- Involuntary exclusion for reasons such as health.
- Involuntary exclusion for reasons placed by employers or the State for instance lack of documentation or in the US drug testing by employers.

Although these factors relate to just one thing, exclusion from conventional forms of work, they can be broken into categories such as access to labour, access to time, access to authority and access through social identity. Here they have been considered within access through social identity. This conceals, or at least underplays the significance that this factor has across several categories. In other words Ribot and Peluso's structure of analysis might discourage thinking more broadly about the potential impacts of an issue.

To provide another example: for all harvesters, but particularly commercial harvesters, access to a vehicle has a large impact on their ability to access resources, through:

- The ability to physically access sites and for commercial harvesters to be able to access enough sites to consistently harvest commercial quantities.
- If harvesting commercially, the need to cover fuel costs and wear and tear of the vehicle.
- To transport material to buyers, or be reliant on a buyer being prepared to pick the harvest up.
- In the US and Canada particularly, access to a vehicle suitable to travel on unmade roads.
- For those without a vehicle the possibility of dependence on other harvesters or middle men.

Conversely to the previous example, this issue is split across the categories of access to technology, capital, markets, physical and topographic factors, access to authority and access through social identity. These two examples illustrate how the importance of factors can become hidden in the wider analysis of ability to access resources, and a summary of the analysis is also necessary to draw out significant themes that that can become compromised by the enforced process of categorisation.

Another problem with Ribot and Peluso's classification is that occasionally the boundaries between the categorisations become blurred. For example, the access that harvesters have to knowledge may be dictated by their access to

authority (and to some extent by authorities' access to them). The process of consultation on the Land Reform Act illustrates this. Harvesters were unable to take part in the process of consultation because they were not aware of the existence of the process, or of the relevance that the forthcoming legislation might have to them. Without recognition or awareness of the extent of commercial harvesting and without official points of contact or lobbying structures within harvesting as an interest group, the inability of harvesters to access knowledge was strongly influenced by their lack of access to authority.

In the same way the relationship between knowledge held by harvesters and knowledge held by scientists and conservationists, who are more part of the establishment (and who may be employed by government organisations), is bound up between access to knowledge and access to authority. Scientists and conservationists may not be aware of the knowledge that is held by harvesters because they have not considered the possibility of its existence and because it is held in unwritten, unpublished forms. Similarly, knowledge that is held by scientists and conservationists is not accessible to harvesters because of the form in which it is held (grey literature such as institutional reports, academic papers) and the closed places where it is stored (academic and organisational libraries). Where and how knowledge is held in turn influences the level of authority that it is accorded: knowledge that it held in the head of a harvester is worth less than that which is published in a government published guide.

Despite the difficulties in applying Ribot and Peluso's framework and the dangers of distorting the analysis that it poses, it is a useful tool in structuring analysis. The framework draws out issues beyond legal and customary rights, examining the impact of wider issues on access to resources in an ordered and rounded manner. The framework will continue to form the basis of analysis in the following chapters, accompanied by reflection on those important parts that cross over categories and which need to be considered on a holistic basis.

Summary and key points

The first section of this chapter described the demographic characteristics of harvesters, the values that harvesters associate with the products that they harvest and their harvesting activity and how harvesters can be categorised

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De Janvry et al's view that legal property rights are the key to efficient resource use appears to have been adopted by the Land Reform (Scotland) Act. Instead of reflecting the current practice and pluralism that is present on the ground, the rights of the landowner have been formalised. In the negotiation of important land reform mechanisms such as the community right to buy, the property rights of the landowner have been reinforced and extended. Legally determined access rights only play a small role in accessing goods. Though the impact of the Land Reform Act on commercial harvesting has yet to be determined, the process of consultation that led up to its drafting and enactment illustrates that access to authority and decision making power plays a crucial role in influencing outcomes.

Goodman sees three potential ways forward from systems where customary usufructory rights go unrecognised:

- that as some analysts suggest, that increased use will lead to the formation of private property rights;
- that governmental control will increase but there will be an ongoing and dynamic process of alliances and empowerment, absorption and marginalisation.
- that the coexistence of legal and customary rights will be formally recognised.

(Goodman, 2002 p 407-10)

I propose a hybrid of the second and third routes, with the formal recognition of the existence of customary rights, but also with an ongoing process of negotiation between groups leading to stability but with the flexibility to accommodate change in levels of use and in other factors. In this system, the rules and responsibility of how to manage resources will be linked to usufruct rights rather than truncated as they currently are.

Following the exclusion of harvesting for commercial purposes from access rights it becomes almost inevitable that measures will need to be put in place to regulate access with the agreement of landowners. To this end, comparisons can usefully be made with the regulatory climates of Finland and the Pacific Northwest USA and Canada and the relative influence that scarcity has on the complexity of regulation. In Scotland increasing harvesting activity has undoubtedly influenced the inclusion of clauses in the Land Reform Act to

exclude taking anything away from land for commercial purposes. In the US and Canada the growth of industries around the harvesting of matsutake mushroom and Salal have led to specific provision of licensing of harvesting of these and other species on many types of land tenure regimes. Often in the US, regulation is too complex to implement or does not fit harvesting patterns, and is therefore largely ignored. In Finland, where both recreational and commercial harvests of berries and mushrooms have been going on for generations, with a very low population density and widely available resources, access rights are very open.

Both demand for resources and their scarcity influence how stringent regulatory climates are. The way that legislation is implemented must therefore be flexible in order to keep pace with changing levels of demand and scarcity. In Scotland though, a path that favours legal rights has been chosen through the Land Reform Act, there is now an opportunity to develop a workable system of regulation in the way that it is implemented. The measures put in place to implement the Act could reflect practice on the ground by taking into account customary rights and practices.

CHAPTER 3: PROCESSORS AND BUYERS

After harvesting, processors and buyers and processing activity are the second stage in the chain of NTFP use. Though these activities are perhaps of most relevance in the commercial industry, they can also impact on personal use and exchange. Looking both at commercial and personal use, this chapter will first address who is involved in buying and processing and the characteristics of these people, especially in relation to the previous chapters discussion of the characteristics of people involved in harvesting. The chapter will explore the Scottish context in detail while drawing parallels and comparisons with the experience elsewhere – particularly Finland and North America. The chapter will then review access issues in relation to buying and processing, again using Ribot and Peluso's theory of access as a structure and focussing on the interwoven relationship of buyers and processors with other groups and the overlapping nature of this activity with harvesting. The chapter also explores the relatively powerful position which buyers find themselves in as middlemen, before drawing conclusions on issues relating to access to resources and the impacts this has on who becomes involved in processing and buying activity.

SECTION 1: PROCESSING AND BUYING ACTIVITY

Commercial buyers and processors in Scotland tend to be a group distinct from harvesters, though evidently there is also considerable processing of products for home use. Looking back at the results of the omnibus survey discussed in Chapter Two, it could be said that the majority of harvesters are people collecting for their personal use. From anecdotal evidence it is also clear that most of products harvested for personal use are also processed to some extent. Consequently, while these people may undertake little or no strictly commercial activity, their activity forms a major part of the processing that goes on in Scotland.

In addition to this domestic level of processing for personal use and consumption, there are many other routes that goods can take through processing between harvesting and final consumption or use. Figure 5 shows

these routes, which are relatively simple chains, usually with only one or two links before the product or raw material reaches the wholesaler or the final consumer.

Figure 5: Routes goods may take through processing

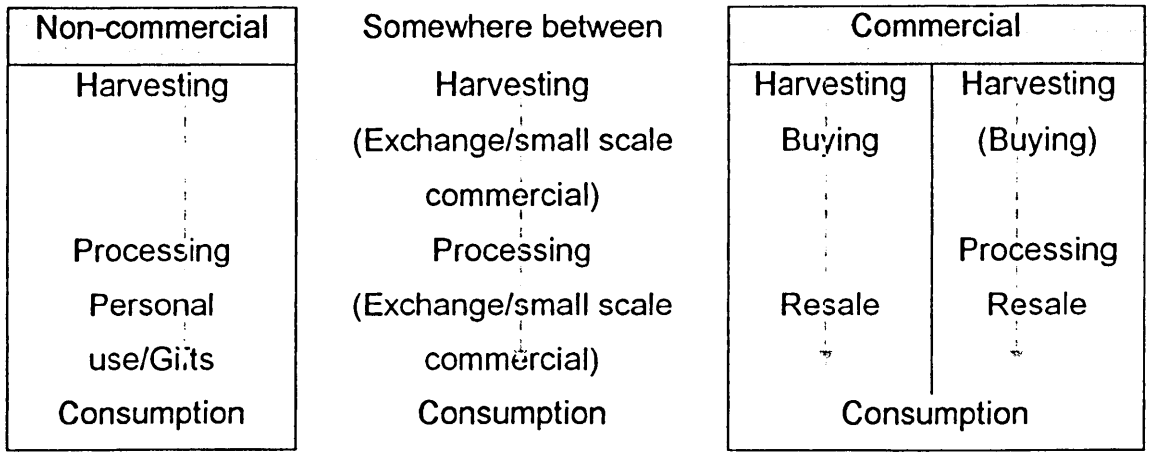


Figure 5 makes a somewhat artificial distinction, separating activities with some commercial intent for processing and which go on to sell the goods and those activities involving people who either use the goods themselves or give them away as gifts. In the commercial category the following discussion separates those who harvest the goods they process themselves and those who buy in the goods that they process. Between commercial and non-commercial activity is a zone which is neither one thing nor the other. Gift involves reciprocity but relations between the partners in the exchange tend to be of a different nature than when it is money rather than goods that are changing hands. Small scale commercial activity also often involves such a degree of overlap with non-commercial activity as to be inextricable.

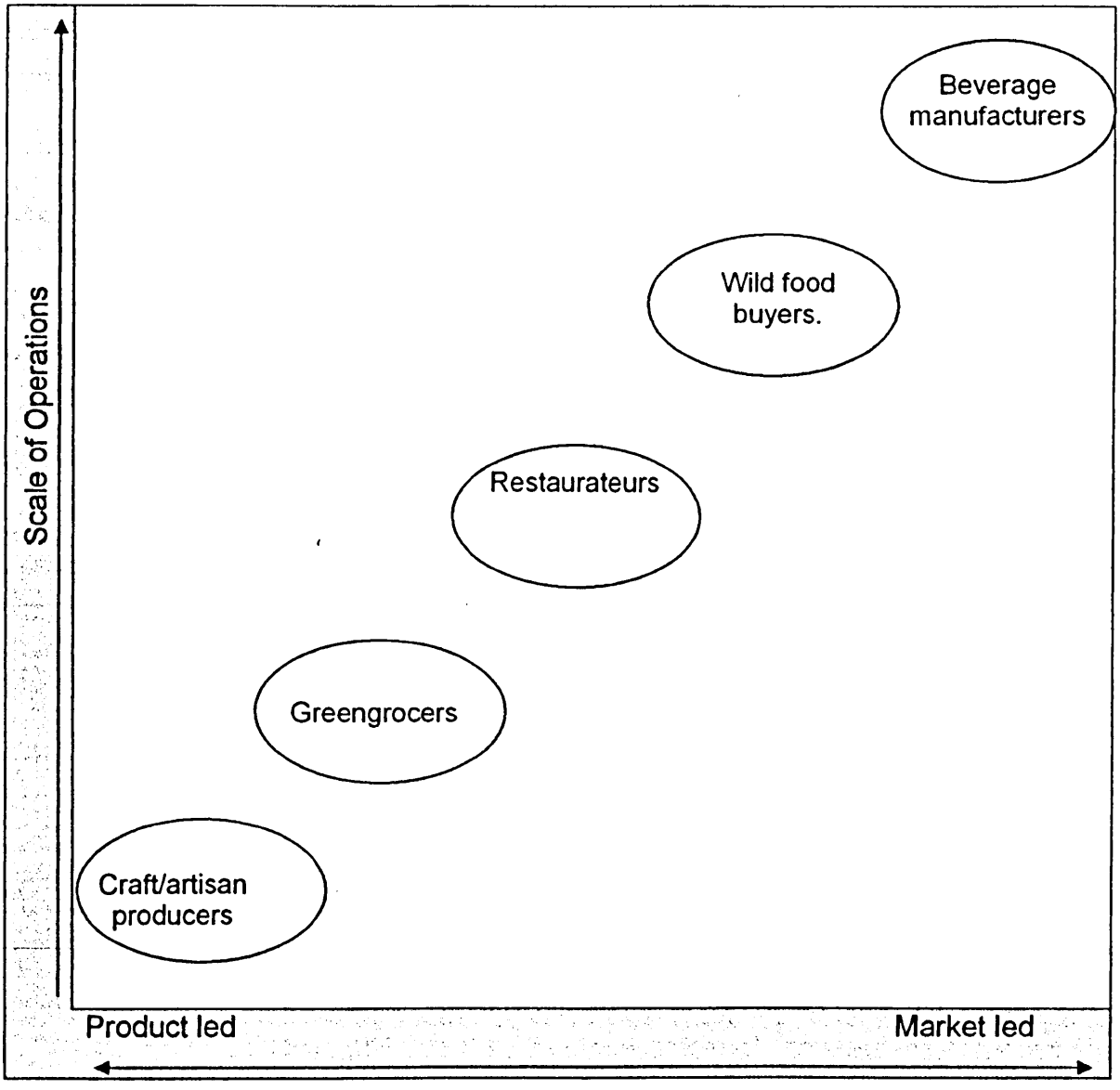
Commercial activity

Although no comprehensive survey of buyers and processors has been completed in Scotland, it is possible on the basis of fragmentary research and anecdotal evidence (due to the small size of the sector) to compile a basic typology of buyers and processors (See Figure 6). In this case there are two main axes along which buyers can be distributed. The first shows the extent to which buyers and processors are either product led or market led. These two extremes represent processors and buyers who are led to seek markets for a

particular product by a conviction that they have found a good product (product led) or use market research to develop products to meet demand (market led). The second axis indicates the scale that buyers and processors operate on.

Drawing out characteristics of those involved in commercial scale buying or processing is relatively straightforward, especially as those with recognisable businesses fall into more distinct groups.

Figure 6: Typology of Scottish commercial buyers and processors



Many **craft and artisan producers** collect for their own purposes in the quantities that they require and as a result may be as influenced in what they produce as much by the raw materials that they find as by what they plan to produce. Scales of operation tend to be very small, perhaps taking less than half

of a single person's time and making a small contribution to their livelihood. These producers may make craft or edible products such as small quantities of preserves to sell at car boot sales and markets, perhaps along with other goods such as home cultivated plants (Bates, 2004). Craft and artisan producers also have another source of revenue generation using NTFPs, providing training in craft skills, which in many cases may be more lucrative than the craft activity itself.

Single outlet **greengrocers** can operate both as a base for buying operations and a point of sale for raw food products. Among the few greengrocers interviewed in 1998 most appeared to view the trading of these products as a small-scale opportunity to sell locally harvested goods direct to the consumer (Dyke, 1998). Whilst the local origins of the product were important, in areas where goods were picked locally, the main market for these goods was tourists; those who live locally were largely assumed to be able to obtain products themselves.

Restaurateurs are probably the main group of processors of wild foods in Scotland, although within this group it is difficult to estimate what percentage buy direct from harvesters and what percentage buy either from specialist wild food suppliers or from other catering supplies. There is perhaps a regional variation in buying practices, with restaurants in the central belt more likely to buy from dealers. In contrast, those in more rural areas, or closer to the main centres of harvesting activity in Deeside, Speyside and the Black Isle, are more likely to buy direct from the harvester, simply because the opportunity presents itself. Obviously there is considerable range in the extent to which chefs use wild foods in their menus, and the knowledge that they have of how to use wild foods. As the popularity of wild foods has grown the use of wild food ingredients has too, but also the labelling of cultivated alternatives as wild fungi has increased. Restaurants frequently use a mix of wild and cultivated fungi, using cheaper, cultivated species such as shiitake to provide bulk.

Several more recent **wild food buyers** have emerged from amongst the former employees of other wild food buyers. Specifically, it is former drivers who have set up new companies. These drivers would have had day-to-day contact with

the customers, mainly chefs. With this knowledge of the market and a ready made list of potential customers, these drivers are in a good position to set up on their own. Finding harvesters to fulfil orders is relatively easy in comparison to finding and learning the requirements of new customers.

These new buyers can be termed opportunist or accidental entrepreneurs, in contrast to the more long standing wild food buyers who have tended to begin with a particular product, which in the majority of cases this has been fungi. While the more recent buyers may in time become established in the same way as the long standing buyers, there is a useful distinction to be made in the type of knowledge these entrepreneurs have and the way in which they have acquired. The more longstanding buyers developed markets and an awareness of the product which newer buyers are now able to take advantage of. Having established markets for the fungi longstanding buyers have been able to expand the range of species they deal in as relationships with chefs and other markets are established. The majority of these buyers have also expanded the range of products they carry, again relying on the distribution network they have built up to market other wild foods and catering supplies to the same customer base. Other buyers have expanded in a slightly different directions, instead of using the customer base they have built up in the UK to expand, they have in turn used the contacts they have built up in exporting fungi to become importers. The fungi season in Scotland lasts for perhaps five months between June and October, but fungi are available elsewhere at other times of year. Over the winter months similar fungi to the main European commercial species can be imported from southern Africa and early in the Scottish season cheaper imports are available from Eastern Europe. Some of the established buyers have combined these tactics to expand their businesses.

Beverage manufacturers such as Highland Wineries, based at Moniack Castle, are focussed on using local wild harvested raw materials to make wines and preserves. Brewers Heather Ales use flavourings such as spruce tips and bog myrtle in their beers, again marketing the goods as distinctively Scottish and from natural sources. Bairds of Glenrowan, Davis Wines, Cairn O'Mhor and Orkney Wine Company also use wild local ingredients for some of their products. At the same time however, all of these companies could be said to be

slightly quiet about the origins of the raw materials for some of their products. While the marketing of the product implies that the product is made with traditionally Scottish ingredients, the actual origin of the ingredients is not mentioned, perhaps suggesting that the ingredients are not actually sourced locally. Beverage manufacturers such as Bouvrage (Ella Drinks) sell their products under an image of naturalness and artisanship. However, it is worth noting that the blaeberries used in their products are imported from Eastern Europe. While the origin of these berries is undoubtedly from wild harvesting, this is not an aspect that is emphasised in the marketing of the product. Other products are made from Scottish grown raspberries, and in this instance the home-grown nature of the raw material is emphasised. When Bouvrage was launched the company issued statements to the effect that they were exploiting the growing market for beverages, and so came to berry products through market demand, rather then as a means of using the available resource. Having established a brand the company is now seeking to source Scottish blaeberries for its product (Thompson, 2005).

The number of Scottish based beverage manufacturers in this sector indicates a growing market that could be supplied, if the price was right and supply chains in place, with Scottish produced raw material. The use of imported raw material does however suggest that these manufacturers may be willing to exploit the assumptions that Scottish manufactured goods made with materials that would be associated with Scotland would also be of Scottish origin. Therefore unless the price of Scottish raw material was very competitive, companies would continue to import.

At the risk of oversimplifying, those involved in processing and buying NTFPs can be typified into several categories described by the primary motivations for involvement. This is indicated in Table 13.

Table 13: Motivations for involvement in NTFP buying or processing

Category	Description
Enthusiasts	Individuals or small businesses, product rather than market led, exploiting local 'natural' characteristics.
Local niche markets	Primarily greengrocers buying in small quantities as and when they are offered without trying to expand.
Trend followers/setters	Restaurateurs looking for the latest ingredients.
Accidental entrepreneurs (raw materials)	Market led and with access to knowledge of markets.
Opportunists	Not necessarily locally rooted. Will expand business into other areas in order to maximise profits and increase turnover.
Market followers	Exploiting the increases in markets such as beverages. Tend use to use imported raw materials in order to obtain volumes required.

One group notably absent from the previous discussion of NTFP processing and buying activity in Scotland are landowners. Some of the reasons for this absence, particularly in terms of the perceived lack of either commercial or non commercial motivations, emerged in a marketing workshop conducted in New Lanark with a forest industries audience, mainly made up of landowners (LW2).

Marketing Workshop, New Lanark

The workshop was part of a day of continuing professional development and was designed to explore how woodland managers could become more involved in NTFP marketing and processing. The following three headings indicate the main areas of discussion. Appendix Two gives details of how all studies used in this thesis are referenced and Appendix Five gives details of the workshop.

Routes to market

The most prominent factor discussed during the workshop was the lack of awareness of routes to market. Landowners are dependent on contractors to

sell products on for them. However, contractors are treated with a certain amount of resentment by the landowners as the following comment illustrates, despite the role that their knowledge plays in bringing goods to market.

> Poor old landowner gets the smallest cut of the lot usually. It's the middleman who makes the money. (LW2)

Landowners also generally rely on contractors to come to them with opportunities, rather than seeking these out for themselves, they are reliant on contractors to build up relationships with them and to be aware of market opportunities.

Perceived lack of profitability

Because of this general lack of market awareness, landowners are inclined to think that dealing in NTFPs is unprofitable and likely to be very small scale in comparison to timber. This concentration on timber may have caused opportunities to be missed, as the following remark illustrates:

> It's a state of mind isn't it, a sort of inertia. An example of inertia, where you are looking at timber, timber, timber without considering anything else until recently. (LW2)

However, dealing in NTFPs can be profitable, as some landowners have found:

> I sold some foliage that I was very proud of, which made more money than selling timber. (LW2)

This inertia has also led to a very limited level of processing being done by landowners themselves. Having been focussed on selling timber as a raw material, landowners have tended not to think beyond looking for similar markets for raw non-timber materials.

Mass markets and certification

Perhaps as a result of thinking in terms of markets for raw materials, landowners were keen to see NTFPs developed as mass markets – an approach that they agreed would require significant public education and indeed a change of culture to something approaching that in Eastern Europe. Whilst there is a desire for a more positive public perception of forests and a public

more aware of the non-timber benefits to be gained from forests, the difficulties of supplying mass markets remain. Participants agreed that communal approaches to marketing were the only likely solution to the problem of supplying the sorts of volumes that mass markets require.

This workshop illustrated the importance that buyers and processors currently have in the NTFP industry in Scotland. Without these 'middlemen' playing an important role in seeking out goods at source and seeking out markets, these products would be unlikely to leave the forest for commercial markets. The discussion also highlighted the difficult relationship that buyers and processors have with landowners, where landowners undervalue the importance of the market knowledge that buyers and processors hold, whilst doing little to encourage the production of NTFPs or engage with markets themselves.

Finnish NTFP buyers and processors

As in the previous chapter, Scottish NTFP activity can be contrasted with experience in other countries. Finland provides a useful comparison, as a country with a relatively well developed commercial NTFP sector. Enterprises studied in Finland were generally family businesses, trading for a couple of generations. This immediately marks a contrast with Scotland where few enterprises have such longevity. Some enterprises could also be described as social enterprises aimed at providing employment for certain sectors of the population. These businesses also operated to some extent as cooperatives, facilitating market opportunities for a number of micro businesses. Businesses were involved in buying raw materials, processing either to a semi-processed state or to a final product. In all these areas interesting contrasts with the Scottish experience are clearly in evidence.

Research in Finland was carried out through a series of interviews, the specific focus of which was the factors that make products successful, one of the first goals of each interview was to determine what each interviewee viewed as the characteristics of a successful product. These questions often also inevitably led to discussion of the characteristics or prerequisites for successful NTFP enterprises. In the analysis of these interviews factors identified for NTFP and business success are divided into those affecting success positively and

negatively. Often these factors can be described as two facets of the same experience, each with benefits and drawbacks. Altogether a total of 77 factors were identified, grouped under the following headings and in order of frequency of expression:

- Raw material supply
- Production factors
- Marketing and markets
- Research and development
- Demographic factors
- Nature of enterprises
- Profitability
- Support from government

Each of these eight headings will be examined in turn in the following discussion.

Raw material supply

A supply of raw material is one of the most fundamental pre-requisites for NTFP enterprises. Interviewees cited the seasonal availability of goods as a positive thing, giving variety throughout the year and in the case of food products a continuous supply of different products to the same market throughout the year. These businesses are also located close to the supply of goods, enabling them to use local knowledge to forecast when supplies would become available. At the same time however, a businesses can also be a large area, as people bring in preserved products to regional centres when they make occasional trips to town. Products are also brought in from up to 200km away as people harvest while visiting their summer cottages and then sell goods either fresh or preserved on their return. In these two cases the products may not be harvested locally, but the harvesters themselves have local links of some kind. Through these local links the buyers are able to expand the range of their businesses without additional costs.

Production factors

Having obtained supplies of raw material, most enterprises engaged in some form of processing: from the most simple – sorting, grading or drying – to more complex processes. Two major aspects of this were mentioned in the interviews: the ease of dealing with the product in terms of handling and storage; and the satisfaction workers derived from carrying out the work,

particularly that they were doing something special and worthwhile. Workers often have to be experienced and skilled in order to be able to keep up the quality standards expected. Handling and storage considerations are partly in related to the qualities of the products themselves. For instance, several interviewees mentioned that lingonberries were easier to deal with then blaeberries because their higher acid content and more solid structure mean they can be kept for longer before freezing, subsequently stay whole and are as a result easier to handle. Other dealers mentioned that traditional preserving of *Lactarius trivialis* in oil made it easier to deal with as it would not spoil and in addition that there was a good domestic market for the product (Finn 3,4,6 &11).

Local berry buyers have begun to find that competition from cheap imports is becoming increasingly problematic as trade barriers with Russia and China are broken down. This situation is more of an issue for the larger companies who tend to supply the German buyers for example, where international competition is clearly more relevant. A supply chain will be set up to fulfil a large order only to find that the following year the buyer will set up a new deal in Russia or Estonia. These problems are likely to increase as Russian companies develop the knowledge and imports technologies to clean and freeze the berries themselves. Larger Finnish companies are likely to be left only with loyal domestic markets demanding Finnish produced berries (Finn 4, 5, 11 &12). To a certain extent there is also a problem with Russian berries being smuggled over the border then branded as 'Finnish', both to supply larger companies and to sell to small local dealers (Finn 3 & 11). Buying in from Russian suppliers can also be problematic for Finnish companies. As labour costs are significantly lower, work that would be mechanised in Finland is done by hand in Russia. When the raw materials arrives in Finland, because it has been loaded by hand into the truck, it also has to be unloaded by hand and therefore some of the cost saving that was made in buying Russian berries is lost to labour costs (Finn 5).

Processing activity itself can be made with the intention of making a product easier or cheaper to transport. For instance berry concentrates have a market not only because they will keep for longer, but also because transport and storage costs can be reduced for a product containing 75% less water (Finn 5).

Processors described these products as basically being raw material in more concentrated form with no added ingredients (Finn 4).

Quality control is very important for the smaller buyers, particularly as they may be buying in products that have been part processed by harvesters. The buyer therefore has to ensure that harvesters are working to a consistent recipe and standard (Finn 3). This process is fairly labour intensive, requiring skilled staff to sort and grade products as it arrives. Buyers of bulk raw materials have adapted technologies from other industries to suit their needs. For instance, machines that can sort according to colour are used to separate berry species and clean out foliage (Finn 4).

Markets and marketing

Almost all those interviewed mentioned customer awareness as a key issue in marketing their products, whether this was because they were selling to established markets and were able to attribute demand to an educated customer base, or whether they were trying to establish markets for new products. While several researchers interviewed mentioned that Finland was stuck in a rut of raw material production, several of the buyers and processors interviewed were producing for these raw material markets precisely because established demand exists (Finn 10, 11&12).

Small enterprises producing goods that fall outside traditionally used products have the additional task of establishing markets and the key to this was seen as customer awareness. A particular problem with raising awareness was identified in labelling restrictions that do not allow claims to be made about the properties of products without clinical trials. Finland has undergone something of a revolution in changes in attitude towards health in the last twenty years. Having once been at the top of heart disease statistics in Europe, it has now moved down several rankings (Uemura and Pisa, 1988; Vartianinen et al., 1994). In particular, initiatives such as the North Karelia Project have encouraged the use of wild harvested berries as an important source of antioxidants and flavanoids. Despite the official backing for these products labelling them as containing flavanoids or antioxidants is not allowed without stringent testing (Finn 4). The promotion of berry consumption has led to levels that it would be difficult to

expand on, with the average Finn consuming 8.3 kg of wild berries per year (Moisio, 1991).

The concentration on health benefits has opened the way for other products to be marketed on that basis, including traditional remedies, bandages made of natural materials and clothing made from natural fibres and marketed as healthy (Finn 2). In other cases products are designed to look rustic so that it will *look* more natural and therefore 'healthy' to the customer, for instance, berry concentrates are deliberately made cloudier. Part of this is due to a general scepticism towards processed foods and products rather than to the positive benefits of the unprocessed goods.

NTFP markets are notoriously fickle, and part of the reason for this is the influence of fashion. Products can be popular one moment and then replaced by the latest trend the next. Some NTFP producers have to be able to foresee when markets will change and what to develop next. Given the difficulties of supplying in competition with big producers in Russia and China, smaller producers have chosen instead to look at niche markets, such as those dictated by fashion where unique and exclusive goods can achieve higher prices in a smaller market. These products are not intended for everyday use but as occasional purchases, for instance as gifts. Packaging to make these goods attractive and special is as important as the quality of the products themselves (Finn 2). Producing these exclusive products is a source of pride, in the quality of the product and in the inventiveness that producing an exclusive product takes. Opportunities for berry processors to enter smaller markets come in supplying domestic companies with a very high quality product, for instance organic berry concentrates (Finn 5). Certification schemes accrediting products as environmentally sustainably produced are also factors in targeting these niche markets and in adding value. However, certification can also bring problems when marketing outside Finland, as Finland operates several systems of certification, which are not harmonised with German certification systems or the (British) Soil Association's standards. This lack of harmonisation leads to difficulties with mutual recognition of the standards, particularly when selling in Germany and some of the added value is as a result lost.

As mentioned earlier, the buying power of large scale processors and consumer markets can have a negative impact. One producer mentioned that one of their products was now stocked by a supermarket, but that the supermarket had been able to negotiate a deal whereby the price of the goods on sale in the supermarket was less than in other outlets (Finn 2). Producers are therefore forced to reduce their margin in return for a potentially larger volume of sales.

This question of scale of operation brings differing marketing strategies for different sizes of enterprise. Both large and small scale enterprises must contend with the close links of the Finnish population to the countryside (also discussed in Chapter Two), which can be seen as both an advantage and a hindrance to marketing. A population that regularly visits summer cottages and has direct access to wild harvests will only buy in products that it can not make itself or does not have time to make. At the same time this educated population is also aware of the properties that these products have and is willing to pay for quality. Additionally, awareness of the traditional uses of wild products can be utilised in the marketing of new products. For example in Finland, the flowers of rosebay willow herb are a seen as something so common that they are the kind of gift a neglectful husband would make to his wife. Recently one of the interviewees had drawn on this tradition to make a far superior gift of a preserve flavoured with willow herb.

The harvesting of all but a few species of fungi is a relatively new activity in Finland. Several species have traditionally been harvested in Finland but are not picked to any great extent elsewhere; conversely, species that are popular throughout Europe such as cep and chanterelle are not traditionally harvested in Finland, despite the availability of the resource. Opportunities to export these products to places such as Italy where strong markets exist have therefore often been realised by those with links to the markets rather than by established Finnish traders. Hence, several Italian mushroom dealers have set up in Finland, in some cases using Italian labour as well as supplying Italian markets (Finn 3 & 12).

Knowledge of markets and marketing is clearly of vital importance to the success of a product and yet many small enterprises neglect or only accord a

relatively low priority to this area of work. As a result whether it is really the goal of these businesses to expand can be questioned or whether continued low-level existence is the intention. In the case of the small enterprises interviewed, frustration at not being able to devote adequate time to marketing and expanding their businesses was mentioned (Finn 1&2). Whether this is also the case with micro businesses is not known. NGO support organisations and services provided by local government clearly have a role to play in helping enterprises with research and development and in promotions.

Research and development

Developing new products and markets for those products is inherently risky for small businesses. Two strategies for new product development emerge; firstly a market orientated strategy generally taken by larger companies with more available funds for market research and forms the first step in the development of a new product. This strategy might have higher development costs but at least is more certain and has a ready market. The second strategy, more generally taken by smaller businesses, is to develop new products according to innovative variations on traditional products. This approach involves educating the consumer to recognise the new product as having the qualities that they are looking for; as a result it is clearly less certain in its eventual profitability.

Demographic factors

Buyers and processors are clearly dependent on harvesters to provide them with materials and government officials in Finland and researchers interviewed identified older, unemployed people as the primary commercial harvesters, though businesses themselves said that the harvesters come from all generations and walks of life. These two positions would mirror the situation in Scotland, where commercial harvesters are very varied, but those who are really active do tend to be both older and unemployed. The Finnish system favours this as a method of income generation as earnings from wild harvested goods are tax free, and access rights to all land include harvesting (in most cases) for commercial purposes. In contrast, in Scotland income from wild harvested goods is subject to tax, and as described in Chapter Two, access to land for the purpose of commercial harvesting is illegal without the permission of the landowner.

As well as dispersed populations, leading to a large catchments for each business, businesses themselves are also dispersed, making cooperation to supply large volume and to share the cost of processing equipment more difficult. Businesses may not be aware of each other and so opportunities for cooperation are missed.

Nature of enterprises

As in Scotland, the use of pluriactivity is a common strategy for rural dwellers to reduce their reliance on unstable or poorly paid employment. This kind of activity does not however always show up in government statistics. This may in part due to methods of counting and recording, where only businesses of a certain size are recorded. Lack of recording may also be due to the proportion of these businesses operating outside the formal economy; enterprises may ensure that that their activities go unrecorded in order to avoid tax. Pluriactivity among 'official' businesses is also common, with some examples being the sharing of premises and facilities between a fish farm, cheese factory and even a slaughterhouse and berry processing plants. These businesses have the advantage of being able to share expensive equipment such as freezers, and systems such as distribution networks that once set up can be made more cost effective.

Support from government

Government supported projects see networking as a crucial tool for advancing NTFP enterprises: to allow businesses to share facilities and experience, to facilitate research and development and to develop quality standards. These dispersed businesses are somewhat understandably suspicious of attempts at networking and the development of cooperation for two reasons. Firstly, businesses are unwilling to share information, skills or equipment that may give them a competitive advantage and need to be convinced of the advantages of networking before they are prepared to open up. Secondly, these small businesses operating in remote areas may see attempts at promoting networking as government interference. Businesses that have not been able to access support, or have seen unsuccessful initiatives in the past are unwilling to open themselves to the possibility of spending time, energy and resources on something that might not be worthwhile, or at worst might be set up in order to allow the government access to their affairs.

Support organisations may have a useful for lobbying. Given the 10,000 or so nature based enterprises (including service-based enterprises as well as product based enterprises) that the Seinajöki Institute for Rural Research and Training estimate exist in Finland, this sector ought to be fairly strong (Finn 8). Many of these businesses are too small to have resources to devote individually to lobbying. Within the Finnish Food Agency there is a Natural Products Industry Group, but businesses reported that this tends to be dominated by the larger players. Tension between large and small enterprises, those who are long established and those who have recently set up adds to the difficulty of pitching support services to such a varied sector.

Profitability

The profitability of particular products or indeed enterprises as a whole was rarely mentioned in interviews. There may be several underlying reasons for this. Firstly, profitability is an overarching concept influenced by all of the individual factors discussed in interviews. It may also be assumed that profitability, at some level, is an essential for the operation of any business. Thirdly, it could be surmised that from the lack of interest shown in expansion, particularly by the smaller businesses, that while growth is desirable, this desirability has limits, and that too much expansion may also bring a disadvantage in forcing entrepreneurs to increase their reliance on one source of income.

Profitability was not particularly mentioned as a factor in the success of individual product lines. Instead the majority of producers preferred the stability offered by spreading risk across a number of products. Stability of demand for a product was seen as a desirable characteristic, such as products that have a strong tradition of use without competition from countries with cheaper labour supplies. For example, mushrooms such as *Lactarius trivialis,* that are consumed in Finland and Scandinavian countries are consistently popular and are supplied from domestic sources alone.

Some general conclusions can be drawn from this analysis, principally, that the NTFP sector is very varied. The industry in Finland has developed over many

generations and much larger companies exist than are present in Scotland. The NTFP sector, thanks to long term traditions of use, is also much more visible. While the large enterprises that are present in Finland have not developed in Scotland, micro businesses operating on the edge of or outside the formal economy presents a similar picture. The variation in the sector represents variations in level of commitment to businesses. Many of those small businesses are aiding the continued survival of rural populations and are providing a safeguard against fluctuations in the employment market. Therefore enterprises are unlikely to grow beyond what is possible in a small proportion of the entrepreneur's time, or to become more than one of several contributors to livelihood.

One of the major factors in the commercial success of products is the way in which they are marketed. As I have discussed in relation to both Scotland and Finland, products are often marketed in ways that draw on qualities that also motivate non-commercial use; naturalness, healthiness, rusticality and tradition among them. I will now go on to discuss the characteristics of those involved in non commercial processing, illustrating the ways in which the marketing of commercial products borrows from non commercial uses and the difficulties (also discussed in Chapter Two) of separating commercial and non commercial activity.

Non-commercial activity

Harvesting of small quantities of wild goods for personal use, exchange or for use as gifts probably forms the majority of harvesting in Scotland; and of those engaged in this activity the majority probably also engage in some form of processing. Indeed, food products harvested for personal use generally go through some form of processing before consumption: whether cooking for immediate consumption or some form of preserving. Craft and decorative products harvested for personal use also tend to go through some form of processing: from the most basic cleaning, trimming or drying to more complex processing such as dyeing. These activities are often dismissed as being carried out as leisure pursuits by middle class middle aged women. However, the omnibus survey results (see discussion in Chapter Two and results in Appendix Three) show that while there is some evidence to support this cliché,

these activities are carried out by a much larger spread of the population than this suggests and anecdotal evidence shows that these activities play a very important role in peoples' lives, in some cases providing nutrition or substituting for goods that would otherwise be purchased. NTFP processing could be regarded as a very therapeutic activity which provides an opportunity for creative expression that may be lacking in everyday lives as a result adding significantly to quality of life.

NTFP processing is an activity that families engage in together, providing a means of personalising surroundings, obtaining healthy food and providing thoughtful gifts and items to exchange. Additionally they can represent a small source of income that can be used to pay for 'extras' such as holiday spending money or be put into children's bank accounts. When livelihoods are marginal these sorts of benefits may provide the extra economic or social rewards that make living in rural areas feasible and attractive. These sorts of benefits may in fact be the pay off for lower income or lower job security.

As well as those indirect benefits that processing wild harvested NTFPs for personal use brings, there are also those who are dependant on NTFPs to substitute for goods that would otherwise be purchased. Dependence may be voluntary or involuntary, either by economic necessity or because of a conscious decision to attempt to live lightly on the land. Like those who benefit more indirectly from personal use of NTFPs, the characteristics of this group have been defined in the previous chapter. The kind of processing that these groups are involved in is difficult to assess, apart from in quite general terms. The greatest likelihood is that the main activities are still in food processing and craft production. Producing traditional goods for festivals, such as wreaths for Christmas and seasonal goods such as berry preserves are also traditions that are very much alive.

Between these various kinds of non-commercial activity, and processing and buying that is clearly recognisable as business based, there also exists marginal or grey activity; particularly in terms of the direct exchange of goods or services and occasional and very small scale commercial exchanges. From the data available in the omnibus survey it is difficult to separate out those who are

involved to some extent in commercial activity or exchange, from those who purely use the goods that they harvest themselves. There is clearly a continuum of activity from those who process goods primarily for their own consumption to those who are primarily engaged in business activity. That said, there are also clear differences between those who harvest for sale and those who are engaged in buying or processing on a commercial scale.

SECTION 2: THE IMPACTS OF ACCESS TO RESOURCES ON BUYERS AND PROCESSORS

The previous section of this chapter explored the characteristics of those who are involved in NTFP processing and buying, this section reviews how issues of access to resources of all kinds influence those who are involved in processing and buying. Again Ribot and Peluso's framework for analysis of access to resources (Ribot and Peluso, 2003) is used as a basis for this analysis. Ribot and Peluso analyse power relations through identifying mechanisms of access and structural and relational mechanisms of access. This section also defines relationships between processors and buyers and supplying harvesters, upstream buyers, processors or customers, landowners and government agencies who provide regulation and support for businesses, illustrating what Ribot and Peluso refer to as the 'webs' or 'bundles' of powers that configure natural resource use.

Rights based access

The impacts of rights based access on those who harvest for their own use have been reviewed in Chapter Two, however, the impacts of harvesting rights, particularly legal rights, do have knock on effects to those who are involved in processing and buying. In particular the recent changes in access rights that have come into being through the Land Reform (Scotland) Act 2003 could impact on the availability of raw materials to those who buy goods in for processing or for resale. The real impact of this legislation will only be known when it begins to be implemented.

In addition to legislation dealing with access to land and resources, commercial buyers and processors are also governed by legislation relating to their business practices and, in some cases, food hygiene and sales. Most buyers

and processors do not employ those who are engaged in harvesting, but instead tend to pay cash in hand by weight or volume (and are therefore merely purchasing goods). There are also other practical reasons for buyers to pay cash to harvesters rather than employ them. As most harvesting activity is seasonal, the administration involved in taking on many temporary employees would be huge. The extent to which harvesters are involved also varies greatly, and payment by weight or volume is the most practicable solution. This disadvantages harvesters, because as a disaggregated group they are vulnerable to change and are denied any of the rights that more formal employment would bring. However, the situation also leaves them the flexibility to be able to choose to move to a different buyer if prices are better, or vary the level of their activity as they require.

Legally, buyers are obliged to notify Inland Revenue of any business activity that is liable for tax, unless the person(s) involved already complete a tax return (Grabiner, 2000). On the scale that the fungi buyers in Scotland operate, with several hundred pickers involved each year, this is a considerable undertaking. The requirement to declare these cash payments, should in theory, also encourage buyers and processors to declare cash income, and therefore show true liability for VAT, whether in reality this results unknown.

Regulations relating to food and other industrial standards also impact on NTFP businesses and given the variation in scale that is present in commercial NTFP activity, from micro businesses occupying only part of one person's time to small businesses employing up to ten people, these regulations may be difficult to abide by. These regulations involve the use of kitchens fitted to specific standards, the use of specialist refrigeration systems and so forth. Specific regulations apply to some foodstuffs, particularly meat based products and jams where regulation concerns contents.

Implementation of legislation

Abiding by hygiene regulations may be very difficult for small business as the costs of fitting kitchens to the required specifications may be well beyond the expected profits from a venture. Fitting kitchens in the small spaces available in homes or small units may also be difficult. Regulations often require that there

are minimum distances between certain items of equipment, and those distances may simply be impossible to achieve. Increasingly such regulations are impacting on very small scale processing, for example the Women's Institute reported that hygiene regulations were making it difficult to sell preserves at charity sales (Seenan, 2004).

In the UK since the publication of the Grabiner report on the informal economy in 2000 there has been increasing attention paid to businesses that are likely to operate in the informal economy (Grabiner, 2000). In compliance with Grabiner's recommendations it is now necessary for buyers to engage in greater levels of record keeping in order to ensure that it is possible to trace cash paid out to harvesters and therefore in theory to calculate whether tax is paid on that income or whether benefit fraud is taking place. In effect this has transferred the point at which the economic activity becomes hidden from the buyer to the harvester. Also following this report the Inland Revenue set up a Hidden Economy Unit. This unit has been monitoring the activities of some of the buyers of wild harvested goods, not so much due to suspicion over their activities, but in order to monitor harvesters (Ralston, 2003). As a result, in order to keep their activities hidden some harvesters now resort to using several identities to sell their goods, or ask friends and relatives to sell the goods for them (Hyman, 2000). Whilst buyers can do all they can through record keeping to ensure that it is possible to trace payments to harvesters, their methods of operation (i.e. using cash payments) does put them in a position that makes them relatively likely to be investigated and to have to spend resources dealing with investigations.

Investigating the informal economy is not a particularly cost effective activity for the Inland Revenue. In terms of the cost of investigation compared to unpaid tax recovered, returns from the informal economy average 1:1.2 whereas investigations of larger businesses yield 1:57 (Grabiner, 2000). Although the scale of the informal economy is large – in the Borders region it was estimated to be worth £41million (Maxwell, 2002) - given these returns, attention would be better directed to larger offenders, especially given the risk that investigation may drive activity further into the black economy or cause it to cease rather than moving it into the formal economy as intended.

Elsewhere buyers have been used as a route to the regulation of commercial harvesting, either through licensing schemes or through the regulation of their sales practices. This regulation is dual purpose – to ensure that tax obligations are met and also to monitor and limit the impacts of harvesting on habitats. In 2002 Forest Renewal and BC Ministry of Forests commissioned a report on the future regulation of NTFP harvesting in British Colombia which recommended that:

> ...government agencies should maintain their prescriptive role but minimise any operational role. (Tedder et al., 2002)

The report recommended that in order to maintain efficiency of operation this approach should be taken through a buyer licensing scheme (the public benefit of regulation outweighing the cost of implementation). The onus on recording where harvesting takes place would therefore be placed on the buyer rather than harvester. Buyers would be forced to carry out the policing of harvesters in order to retain their licenses and therefore the government agency could implement restrictions with a lower administrative burden than that required to regulate harvesters directly.

A system of self regulation where there was a market demand for sustainably harvested goods would be the ideal approach to sustainable harvesting. In such circumstances demand would be transmitted from the consumer down the market chain to the harvester. Opportunities would be provided for monitoring the impacts of harvesting on species and habitats and imposing conditions on the harvest (limiting harvest levels or controlling how the harvest is carried out), but also monitoring tax liability on harvester's incomes along the way. This form of monitoring and implementation of regulation requires that there is a market demand and in the bulk of cases this does not currently exist. A survey carried out in 2002 identified that buyers were interested in being able to show chain of custody for goods (Dyke and Primrose, 2002). However desirable, in practice being able to show chain of custody does not really result in any market advantage and there is therefore little incentive for buyers to encourage sustainable harvesting practices among the harvesters who supply them.

Akerlof's (1970) theory on quality and market mechanisms would indicate that as sellers have more complete information on the product than the buyers, it is currently impossible for buyers to tell the difference between sustainably and unsustainably harvested goods and therefore will not be willing to pay more for sustainably harvested goods. Kite marking would therefore enable the asymmetry in information between buyers and sellers to be evened out, and from the buyers point of view it would be worth paying more for sustainably harvested goods. However, for the buyer to be able to sell the goods on at a premium the final consumer would still need to be convinced that sustainable harvesting was a desirable characteristic worth paying more for.

Customary rights

Buyers are currently reliant on the strength of harvesters' convictions of their customary rights to access land and harvest commercially. In order to maintain their markets, buyers must continue to be able to access supplies; it is therefore in the interest of the buyer to encourage harvesters to maintain good relations with landowners. Buyers adopt varying strategies to achieve good relations, ranging from trying to maintain a low profile in the hope that landowners will not notice what is going on, to attempts to forge formal agreements with landowners, generally however there is little formal contact between buyers and processors and landowners.

Agreements and leases

In 1999 one of the large mushroom buyers began to investigate the possibility of arranging exclusive harvesting rights with landowners (Hyman, 2000). Exclusive rights would benefit the buyer in part because of the possibility of changes to access rights in the forthcoming Land Reform Act and in part because exclusive access rights would ensure supply from specific geographic locations in the face of mounting competition from other buyers. Additionally, while wild mushroom harvesting can generally be carried out with little disturbance that might be noticed by a landowner, activities that are carried out in conjunction with other forest management activities, or require machinery, are much more likely to be conducted under exclusive agreements, either with a harvester or with a buyer. The larger moss dealers for instance tend to develop agreements for harvesting with landowners so that they are able to use small tracked vehicles to extract the moss.

The main difficulty with these agreements is in negotiating the remuneration that the landowner should receive. For products where the yield varies from year to year depending on the weather, the productivity of a given area can be impossible to predict. Both the landowner and the buyer need to be satisfied that the cost of the administration of the agreement will not outweigh the benefits. However, for both buyers and landowners the benefits of these agreements are not just monetary. For the buyer there is the guarantee of exclusive access and the promise that (weather permitting) there will be a supply of product. For the landowner there is the knowledge if the buyer is effective in policing the land under their agreement, only those that they have authorised will be operating on their land, putting a more formal degree of accountability on to the harvesters for their actions.

The current lack of contact between buyers and landowners means that it is impossible for buyers to influence land management practices. Hence, forests that are particularly productive and profitable for a product may be felled without the buyer having any influence (Hyman, 2000; Peebles, 1998). This situation is repeated in Finland as illustrated by the following extract:

> We have very little chanterelle because the forests where the chanterelle grows have been cut down here. Earlier we used to buy quite a lot of them. But it went down in the late 70s and early 80s when everybody started to cut. You just have to accept and try to manage somehow. It's not really a problem, you just have to adjust. (Finn 3)

While buyers are unable to influence the landowners they are able to diversify their business into other products. Management practices that affect the forests in the local area as a whole are treated as something that is unavoidable, and with the perspective that in any case there will be alternatives. Perhaps it is also the case that at the time when the forests where the chanterelle grew were cut down that particular mushroom did not form a large part of the trade. Perhaps if forest management impacted on the supply of *Lactarius trivialis,* a very popular mushroom in Finland, there would have been more of a reaction from the buyers and the general public. Smaller scale management, such as the felling of smaller areas of woodland, are also treated as a minor inconvenience even with

the cumulative effect of felling the scale of forestry is such that there is still plenty of other forest in which to collect.

In the USA this issue has emerged as more of a problem, particularly when acted out between matsutake harvesters and buyers and the US Forest Service. Harvesters, buyers and their representative groups have campaigned against the felling of productive forest in the Crescent Lake area, arguing that the matsutake harvest is worth more than the timber (Preusch, 2004). Somewhat unexpectedly public sympathy has come behind harvesters who are now seen as guardians of the forest resource, when previously (when prices were high) they had been seen as opportunistic ravagers of the forest. There are perhaps two key differences between these various situations, firstly that there has been more active organisation of harvesters and buyers in the Crescent Lake area than perhaps anywhere else in northern industrialised countries, allowing harvesters to act as a group rather than as isolated individuals. Secondly, in this area there is a permit system in operation. Harvesters must pay to harvest the resource, and as a result feel that they are entitled to a greater sense of ownership over the resource.

The recent Land Reform (Scotland) Act has criminalised commercial harvesting without the permission of the landowner. The law has yet to be tested and it is as yet unclear to what extent both landowners and commercial harvesters are aware of the change to the legal position of harvesting, or whether they plan to act on it in any way. This legal change does make the concept of harvesting agreements more attractive to NTFP buyers and processors in order to secure exclusive harvesting rights. For individuals and businesses with smaller scale commercial activity, harvesting agreements might well generate more administration than they would be worth to a landowner. Economies of scale to the landowner may possibly result in inequitable access to harvesting agreements for smaller businesses; additionally personal users would be prevented from harvesting under exclusive agreements.

The legal and customary rights on accessing a supply of goods may be the most immediate influence on the ability of NTFP enterprises to function successfully, but a whole other set of structural and relational mechanisms

relate the ability of the enterprise interact with harvesters and markets and hence to trade.

Structural and relational mechanisms of access

Technology and equipment

The natural characteristics of NTFPs mean that NTFP enterprises tend to have a seasonal supply of raw materials. However, enterprises may have a continuous demand for the product. Because of these differences in supply and demand requirements for equipment and storage vary throughout the calendar. These varying needs can lead to different solutions. In the case of one berry buyer in Finland, a parallel company farming trout operated from the same premises and used deep freeze space at times when it was not needed for berries. During the berry season in the autumn there would be large volumes of berries being bought which would need to be fast frozen, sorted, packaged and stored. At other times the fish farm would use the fast freezing facilities and then ship the fish out to fill orders fairly quickly, keeping some in reserve for times when the freezing facilities were not available (Finn 4). Another business was able to rent out space to other local businesses at times when they were not able to use the full capacity of their freezers. A herb business found that by supplying five or six other companies with dried herbs they could use their dryers to full capacity and grow those herbs that they cultivate on a more efficient larger scale as well as giving their network of harvesters a larger supply of work (Finn 2).

In Scotland, NTFP enterprises have also found that flexibility is essential to deal with varying levels of demand for equipment. For example, refrigerated vans and freezer space are only rented for the minimum amount of time possible. This approach means that there is no initial outlay for equipment as would be necessary if equipment were purchased, or any wasted time when equipment is sitting unused.

In the case of the majority of commercial NTFP enterprises the main equipment needed is for the transportation of goods: particularly raw materials from the point of purchase from the harvester, to the place where they will be processed

or their next point of sale. Storage facilities may also be needed to keep goods between purchase and processing or sale. The majority of processors are small scale but do require some specialist equipment. As mentioned earlier, equipment and space must comply with food standards regulations – and for small businesses this can cost more than is viable.

Access to capital

In Scotland, capital support for micro scale businesses is difficult to come by. Local enterprise organisations tend only to be interested in supporting larger enterprises, even though the scale of investment needed may be far greater in relation to the number of jobs created. Help for small businesses is available from Scottish Enterprise and also from local enterprise agencies. Monetary support does tend to be focused on business growth and on high growth businesses. There are special awards for instance for businesses that are likely to achieve a turnover of £750,000, employ 15 or more people or achieve a valuation of £5 million or more in three years (Business Gateway, Undated). Those businesses, such as many NTFP enterprises as has been discussed that intend to achieve only modest growth in order to preserve a variety of sources of income may therefore find particular difficulty in obtaining funds as businesses are encouraged to grow. Micro businesses with a very small turnover and number of employees are not seen as a priority. For the proprietors these small businesses may never be intended to do more than to fulfil one aspect of a livelihood. Rather than engaging in the high risk activity of putting all of their time and earning power into a single business, proprietors have instead chosen to spread risk, and perhaps also to provide for a limited market by only spending part of their time on the business. Other programmes include the micro credit scheme, where small self-help groups meet every two weeks and distribute small loans. However, the time commitment required for these groups and the focus on business growth would preclude many NTFP enterprises, like other micro enterprises, from participating.

Even if only small amounts of equipment need to be purchased, capital is necessary in order to start any business and the larger the scale of the enterprise the more capital that is needed. Typically, businesses need to make an investment in order to fill orders. In some product areas the minimum order

sizes that second stage buyers and processors demand make it very difficult for new suppliers to set up. For instance, the floral greenery trade is dominated by large Dutch companies. A harvester interviewed on Vancouver Island mentioned that he would like to become a buyer, in order to achieve a greater margin on the salal he was selling. However, in order to do this he would have to sell directly to the representatives of the Dutch Companies in Washington State and that the kind of quantities that they demand would not be possible to fill as a very small company. Therefore, competing with existing companies would be difficult unless sufficient capital could be raised to match or exceed them in size (I & M 6).

Markets

In order to be able to trade in NTFPs enterprises must be able to produce the consistent quantity and quality that the market demands. When setting up enterprises face a choice as to whether aim for existing markets, or whether to develop new markets. In marketing terms this can be expressed as enterprises that are business led and enterprises that are product led. The majority of the natural foods buyers are selling to existing markets, or attempting to expand existing markets to a wider range of customers. More rarely buyers have used the markets that they have established with restaurateurs and chefs to gradually introduce a wider range of natural food products, encouraging the use of new products for a wider range of purposes. Alternatively, in the case of the drinks manufacturer, Ella Drinks, who rather than starting with a product and then establishing a market instead used the expanding soft drinks market as the impetus for developing raspberry and blaeberry drinks to be marketed under the name Bouvrage.

As enterprises make the decision as to whether to establish new markets or pursue existing markets they must also decide how to market their products; particularly, whether they have an informed market or whether they need to inform or educate their market, and how to go about this. In Finland, for example, there are both traditional products – of the sort that everyone would once have made for themselves – and new products, which are either based on new discoveries, or are based on traditional products. Birch leaves and pine oil, for instance, are traditionally used to give an aroma to sauna water. These

products are now available as a sort of large tea bag of dried birch leaves and as bottled and packaged pine oil, to allow the product to be used year round and for those who do not have ready supplies. Other products remain seasonal – such as particular crafts for the Christmas market (Finn2).

In other cases the market for goods out of season has led Scottish-based buyers to source products from outside Scotland. In the case of one fungi buyer, links with a distributor in South Africa allow the market for wild fungi in the UK and Europe to be supplied year round. In the summer and autumn months Scottish produced fungi and during the winter and spring fungi from southern Africa fill demand (Hyman, 2000). Alternatively buyers have expanded the range of products they supply to be able to fulfil demand year round. In some cases this means using different species as alternatives – and consequently needing to educate the market to accept these alternatives – and in other cases moving into slightly different product areas that can still be supplied to the same market. The seasonal availability of goods therefore results in enterprises that are characterised by dealing in multiple products.

In the UK however, the majority of markets have had to at least be re-kindled. The wild mushroom industry is a case in point, where interest was first raised by the use of wild fungi by prestigious restaurants and has gradually filtered outwards to wider and wider markets through greater public awareness. Scottish buyers began by providing the majority of their supply to international markets and to London restaurants. While some buyers have kept this focus the increase in the market within Scotland has meant that it is now possible for some businesses to carry out a greater percentage of their business within Scotland.

Many NTFP micro businesses aim for high quality and niche markets. Prices for raw NTFP materials are relatively low and harvesting may be labour intensive; unless bulk quantities can be harvested processing is needed to gain a viable return. Similarly, in Finland special products are seen as a way to compete with cheap imports from Eastern Europe, particularly of berries, and also to persuade the public to buy something that they or at least their grandparents could make for themselves. A Finnish NTFP enterprise interviewed suggested that in order

to compete with the larger producers of berry concentrates they would need to move in to the organic market, where the standards demanded are higher but there is less competition (Finn 6).

Even as Finland's population becomes increasingly urbanised, links to the forested landscape are strong. Many families have access to a summer cottage and will engage in harvesting when they are visiting (Finn 10). This leaves Finnish NTFP entrepreneurs with a challenge to persuade the public to buy wild harvested products.

> What is a problem is that it [the product] shouldn't be something that you can make easily yourself. Why pay for something that you can make yourself? You only do it because you are too lazy or because you can't. It [the product] has to be something that isn't too close to your life (Finn 2).

Similarly, in Scotland it has been suggested that there is an opportunity to supply the hobby market with craft materials (Milliken and Bridgewater, 2001). However, interviews with craft producers have suggested that the harvesting of the materials that are used is a very important part of the process of producing crafts. The selection of materials for particular qualities and the knowledge of where the materials come from contribute to the finished piece as a part of the process of its creation. Unless these materials too are something that craft producers could not collect for themselves, the market is likely to be limited.

An important factor in these niche products is the pride that the producers have in the product. This pride is what enables them to produce a superior product that will command a higher price. Making a high quality product out of unusual materials is also a source of pride. The cooperative of peat fibre felt makers in Seinajöki are proud to use an unusual fibre and to produce products that are outside the ordinary craft activities of knitting and sewing (Finn 1). Niche markets are therefore important for small producers. Markets where the producer has immediate contact with the consumer allow them to transmit some of their enthusiasm for the quality of product and their knowledge of the resources that they use. Producers of this type are often those who are product led rather than business led. At the same time, however, concentrating on producing a superior, high quality product is what has led the market to them.

Investigating suitable markets takes considerable time and research. Producers mentioned that distribution had remained localised and was haphazard. Places to sell these niche market products have developed. For instance the Helsinki Kaupahalli, a specialist indoor market in food and decorative products from all over Finland, and in Seinäjoki a collective of craft producers run a shop to sell their products allowing a wide range of consumers to be reached (Finn 1). Despite this, distribution had not grown as expected because they had not been able to spare the time to market goods specifically (Finn 2). This point further illustrates the difference between those businesses that are product driven and those that are market driven. Although these small businesses recognised that targeting markets was important, they were not sufficiently interested in expanding their businesses to pursue markets.

These Finnish producers also identified the difficulties in supplying to bulk markets such as supermarkets: firstly, in obtaining sufficient volumes of raw materials; and secondly, in obtaining sufficient quality and consistency of supply to be able to deal with these markets. The buying power that these markets have is also a disincentive to supply them because they are able to force prices down. Finnish business described how jams made from wild berries available in Finnish supermarkets were generally sourced from Eastern Europe where lower labour costs mean that raw materials and processing are cheaper and therefore competitiveness is difficult to achieve (Finn 2 and 5).

In Scotland markets for local home produced foods are developing through farmers markets. There are also other means of directly accessing the consumer which have not yet been tapped by NTFP enterprises, but are becoming of greater interest to agricultural producers. These include various forms of community supported agriculture models such as the selling of woodland honey in vegetable box schemes. These schemes have potential because they allow the consumer some contact with the origins of the product in the same way that wild harvesting does. Many NTFPs are just too scarce and costly to harvest to become commodities, and so niche marketing becomes important. Giving the consumer access to the harvesters' experience is a way of

transferring the characteristics that are attractive to the harvester about wild products to the consumer.

Third party kite marking is another possible way of informing the consumer about the qualities of the product: for green credentials, through certification schemes such as Woodmark, organically through certification schemes such as the Soil Association, or with due regard to those involved in its production through Fairtrade Foundation certification. The market for fair trade goods in the UK grew by over 80% between 1999 and 2002, with markets for organic products also growing, and both forecast to continue to grow at a similar rate (Fairtrade Foundation, 2003b). The Fairtrade Foundation and the Soil Association have recently announced that they will be going into partnership to investigate the possibility of offering joint certification for fair trade and organic purposes (Fairtrade Foundation, 2003a). They are planning to open this certification to the UK in recognition of the difficulties that small producers face in developed countries.

Certification for green credentials is available in the UK for NTFPs through the Soil Association's Woodmark scheme, but at present there has not been any UK take up. This may be due to lack of market demand, but that would be unlikely given the trends described above. The first impediment to certification is the cost involved, as each species must be certified separately. The Soil Association have made moves to try and limit costs generally through group schemes and the scheme for small (under 100ha) or low intensity managed forests (SLIMF) (Hellier, 2004). While these schemes do increase the possibility of landowners considering certification they do not address the fact that although the current structure of the NTFP industry does not necessarily preclude sustainable harvesting, much of the NTFP sector would be unable to engage in certification schemes. As has been discussed previously, the industry is centred on the harvesters, and there is little connection to the landowner or control over the harvesting site. Additionally an element of the industry exists within the grey or informal economies. For both these reasons there is little opportunity for NTFP buyers and processors to enter third party certification schemes.

A slightly different approach however, has allowed a significant proportion of Finnish NTFPs to be certified as organic, as very large areas of forest are certified under schemes such as the Ladybird mark administered by the youth organisation 4H. This scheme is very flexible, perhaps at some cost to its rigour. Where chemical treatments have been used the area can be allowed to fall outside the certified area for a certain time period before certification is renewed. Certification costs are low, allowing the areas of woodland certified to be very large and for landowners to certify all products, not just timber. Harvesters are able to sell goods as organic simply because they have been harvested within the certified area. This allows certification schemes to be accessed by harvesters and consequently provides a market advantage over products harvested outside Finland, though lack of complete recognition of standards may mean that exporters do not benefit to such a great extent.

An alternative system of kite marking would be through industry generated standards. This type of system is used by the floral industry. The MPS label is recognised in the European floral industry – in part because it is administered by the Dutch Federation of Agricultural and Floral Associations, the largest floral Industry body in Europe. This kind of self-certification is only credible with customers if the industry is large enough for an industry body to be formed and for that body to be seen as sufficiently independent to set and enforce genuinely sustainable standards. The wild mushroom industry might be large enough to set up an industry body on a European scale, but at present seems too fragmented for this to be likely.

Accreditation

Another option, which would fit best with the structure of the harvesting in Scotland and existing certification schemes, would be to focus on accreditation of harvesters rather than on the origins of the product. Sustainable harvesting standards could be applied to accreditation and policed through peers, buyers and education of consumers. This option does not however, place any obligation on the landowner to ensure that NTFPs are sustainably managed or that the impact of other forestry operations are minimised. Certification standards should still take account of NTFPs, not least because of public benefit provided to non-commercial harvesters.

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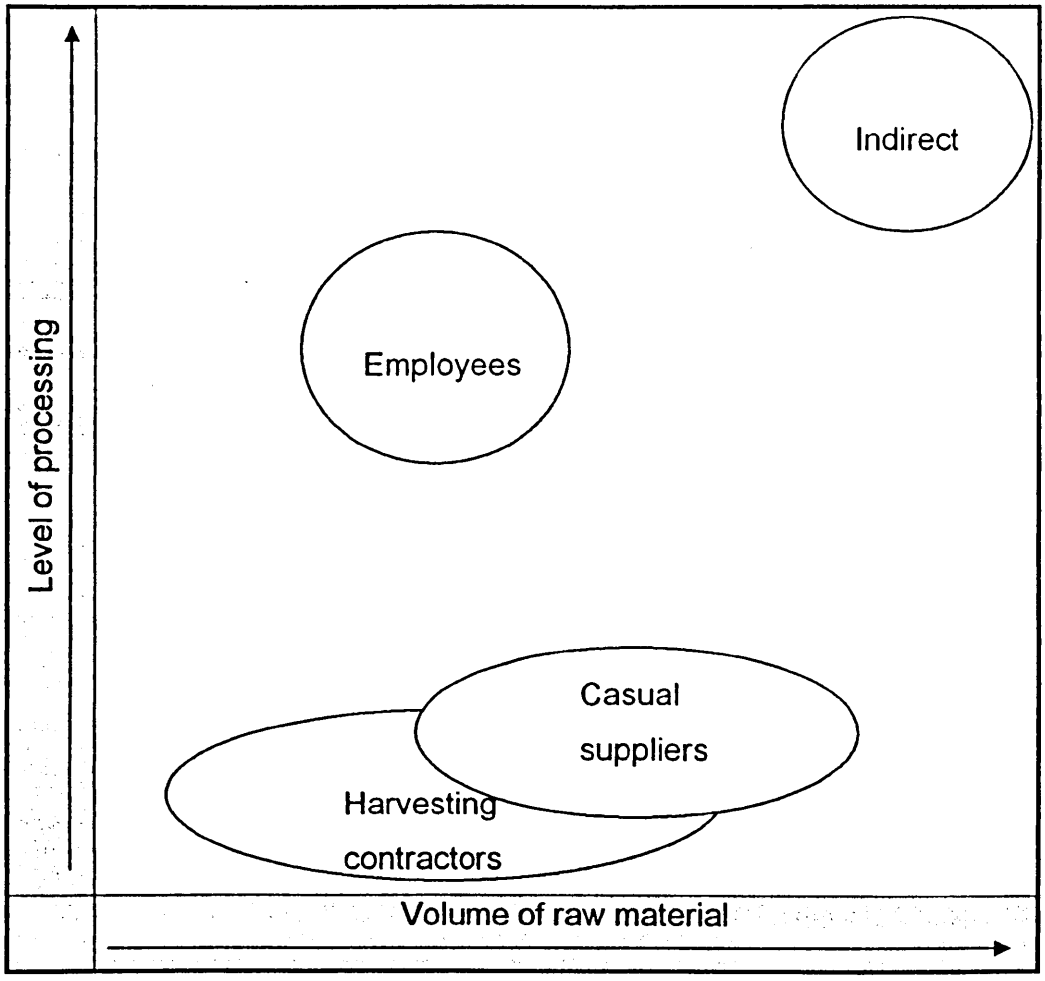
Labour relations between buyers and harvesters are affected by the volumes of raw material used and level of processing applied. Figure 7 shows as a schematic diagram the four very different types of labour relations and the characteristics of the businesses that use them.

- Businesses that use **employees** to harvest products and engage in intensive processing of smaller volumes of products, such as beverage, condiment and jam makers.
- Businesses that have **contractual relationships** with suppliers and buy in relatively large volumes of raw material that is not labour intensive to harvest but which does involve negotiation with the landowner. Moss dealers are an example of this type of business.
- Businesses that have many **casual suppliers**. These relationships may be long term but do not involve any significant level of commitment (other than moral obligation) on either part. These business, such as fungi buyers, deal in large volumes of unprocessed materials
- Businesses who buy from **middle men** in order to obtain large quantities raw materials. These businesses generally have a relatively small product range and engage in large scale processing of raw or semi-processed material, such as larger beverage makers. This last group is unique in that contact with harvesters is **indirect** and therefore the link to the harvest is removed by one or more stages.

To an extent all labour demands for NTFP business are seasonal, though processing and broad product ranges can help to flatten some of the peaks and troughs. Variations in labour demands are dealt with in different ways by different producers, but most involve flexibility in order to deal with products that are available elsewhere or at other times.

Figure 7: Labour relations with harvesters



As well as those buyers and processors that are recognisable as businesses, there are also processors who operate on such as small or hidden scale as to be able to supply all of their raw material needs through their own labour or that of their immediate family. Those who process goods for personal use, as presents or for exchange also tend to operate on this level. Their levels of processing and indeed harvesting may be dependant as much on the time that they have to spare for harvesting and processing as the extent to which they are able to use the products.

Labour costs are one of the main components of raw material costs (along with travel). In Scotland labour costs are relatively high compared to those in other sources of raw material (such as Eastern Europe, Russia or the Baltic States) and therefore other market advantages must be secured from using Scottish

sourced goods.[35] This situation is also the case in Finland and Finnish NTFP buyers are targeted by harvesters from neighbouring countries, particularly Russia, who are attracted by higher buying prices than could be achieved at home. These harvesters often also try to bring berries harvested at home in to the country with them. One result for buyers is that as there is still a market demand for domestically produced berries, measures have to be put in place to prevent Russian harvesters selling Russian berries as Finnish. These measures include refusal to buy from Russian harvesters who have entry stamps in their passports from within the last two days (Finn 3). Reasons for this demand for domestically produced berries are probably twofold: firstly, processors have a market advantage within Finland if they are able to claim that berries are Finnish; and secondly; berries harvested in Russia are obtainable at a lower price, with some attendant disadvantages such as lower quality and greater contamination with other plant material.

Access to knowledge

NTFP entrepreneurs require several types of knowledge: firstly relating to the properties of the products they deal in; and secondly; relating to the markets for those products. To refer again to the typology given in Figure 6, there are those businesses that are product driven and those that are business driven – in either case entrepreneurs need to develop knowledge about one field or the other.

As the wild mushroom industry has developed in Scotland new buyers have set up in business. What is notable about many of these new businesses is that it is not harvesters with knowledge of the products that have set up the new operations, but those with inside knowledge of the markets. As previously mentioned, there are several examples of Scottish companies that have been set up by people who had previously acted as drivers for an established firm. To the customer, drivers are often the public face of the company; the driver will be responsible for delivering the goods and will often develop a relationship with the client. As a result this group can gain a good understanding of market demand, perhaps gather a ready-made client list, and are also able to carry the

[35] Eurostat records the UK as having the second highest labour costs in Europe, with a relative cost of 110.2, Finland records a cost of 111.6 (Eurostat, Undated). Comparable statistics are not available for other sources of raw material.

confidence that customers have in the previous business forward into their new operation. Similar stories were told by Finnish Buyers (Finn 3). This model for the formation of new businesses suggests one of two things: either that knowledge of the customer base is the most important aspect in setting up a new enterprise; or that these individuals have a greater interest in becoming entrepreneurs than those with knowledge of the product. Perhaps each group is playing to its strengths by using the knowledge that it has to best advantage.

What is also noticeable about these new businesses is that they tend to aim for harvesters in the same geographical area as other businesses, rather than develop their own networks of harvesters. As a result the geographical distribution of the wild mushroom industry in Scotland has developed in a way that represents the presence of available harvesters better than the availability of fungi.

Once businesses are established in a particular product area the knowledge of markets often becomes the key to year round business and expansion. This is illustrated by several of the mushroom buyers in Scotland, who have used their knowledge of markets to branch out into similar goods sold to the same customers, or who use world markets to supply seasonal goods to the same customers year round. Whilst dealing in wild products is undoubtedly complex, and at dealer level requires detailed knowledge of international markets. This is partly done in order to operate a year round business; there is also perhaps an element of mythologizing of this knowledge by buyers and processors in order to protect their position and to discourage others from entering the market.

In both Scotland and Finland buyers often attempt to use the press to inform markets of the availability of goods and to encourage harvesters to bring their goods to them. These articles often exaggerate the market for the goods and the earnings that can be generated in a way that does not accurately reflect the actual experience of the average harvester. In Finland the press is used as a form of warning system with regular bulletins on local radio stations and in newspapers informing people about when products are ready to harvest. The press is therefore highly involved in promoting the harvest of wild products and the businesses of those buyers and processors who are asked to commentate.

Without the traditional role that harvesting plays in peoples' lives in Finland, in Scotland the only stories that are able to access public attention through the press are those that present extremes: particularly high earnings to be made, particularly good harvests expected or particularly severe impacts on sustainability. The more everyday news items that inform the public that the berry crop is ready to pick do not merit the same kind of attention.[36]

Access to knowledge and how this constructs and changes markets can also be considered from the perspective of the consumer. As mentioned earlier, Finland has undergone a dramatic change in diet over the last ten years as initiatives to increase the consumption of wild berries, fruit and vegetables and to reduce the incidence of heart disease have taken effect. Having begun health initiatives related to diet in which wild harvested products are important, the health benefits of other wild products are also being marketed. From drinks high in antioxidants made from pine bark or berries, to bandages and dressings made of natural fibres. As the public has become more health conscious and more accepting of traditional remedies it has become possible to market more goods for their health properties. The knowledge that consumers have is therefore an important limiting factor in the way that products can be marketed. The more knowledgeable the consumer about the properties of a product the easier it is to market a product to the consumer.

As discussed earlier, knowledgeable consumers can also mean that products must be more inventive or unusual to catch their eye and stand out as something that could not easily be made at home. Non-traditional products must therefore be developed by processors. In other cases it is precisely that homemade, rustic quality that makes a product attractive. Elderflower cordial for instance is a traditional drink and is very easy to make at home, with very widely accessible raw materials, but despite this is also very popular now as a commercially produced beverage. The UK market has clearly become educated to accept elderflower cordial as a natural product, but not sufficiently knowledgeable (or willing) to make it for themselves rather than buy it.

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[36] The brief survey of press articles mentioned in the introduction found that the other main type of story on harvesting is lifestyle articles which inform on the availability of products but without addressing sustainability in any great detail.

Physical and topographic factors

Accessing markets, other than very local markets, is made difficult by the population distribution found in both Finland and Scotland, with highly populated bands across the south of both countries and a resource rich but sparsely populated north. These sparsely populated areas lead to dispersed harvesters and dispersed buying and processing companies, with long travelling distances between source and market to transport both raw and processed goods.

Dispersed harvesters mean that either the buyer or the harvester has to transport the product from the source to the next point of sale. In Scotland this has led to a peculiar geographic distribution of fungi buyers. Buyers are concentrated on the Black Isle, though there are other areas that are equally resource rich; buyers have tended to locate close to each other, and existing harvesters, rather than developing new networks of harvesters in other areas. Some of these buyers operate a buying round, so that harvesters in other areas are able to sell relatively close to source. However, much like the harvesters, in order to travel they must be convinced that the mushrooms they are going to buy will be of sufficient value to make the trip worthwhile. Though buyers are concentrated, this does not yet seem to have resulted in competition leading to higher buying prices (Hyman, 2002). In 1998 prices were identical at several different buying stations.

Transport costs make up the other major component of raw material prices, and with large distances to travel in countries such as Scotland and Finland, both with relatively high transport costs, this serves to make relatively local markets more attractive.

Access to authority and decision making power

Access to authority and decision making power for businesses is, to a large extent, dictated by size and economic influence. Given the range of scales of operation of NTFP businesses, with the majority concentrated at the micro-business scale, this gives a widely differing range of influence. Many of the businesses interviewed in Finland identified government support as being a key factor in the success of businesses and in order to obtain this support,

businesses must have sufficient influence to request it. As detailed earlier in the section on access to authority, businesses starting up in Scotland only begin to receive significant financial help if they are planning to be relatively large scale operations. Micro scale businesses therefore barely register.

Despite the recognition of the importance of pluriactivity in maintaining rural economies (Scottish Executive Environment and Rural Affairs Department, 2003), the role of micro businesses in pluriactive livelihoods is often neglected, with the result that these businesses are may not be given the support that they merit. Micro businesses may not be recorded in official statistics because they operate on the edge of the formal economy. Surveys of economic activity may therefore under-represent the extent of pluriactivity. As well as under-representing the extent of pluriactivity, its importance as a livelihood strategy may also be under-represented. The particular flexibility that NTFP enterprises can offer are able to fit around other work commitments, both in everyday life and at times where other seasonal employment may decline, and may also be made to fit around other household commitments. Shucksmith and Winter record that living in the countryside is seen as a major reason for farming, particularly among those who gain more than 50% of their income from off farm sources (Shucksmith and Smith, 1991). Similarly, those who engage in NTFP enterprises may earn only a small percentage of their income from the enterprise, but it enables them to continue living in a rural area.

Without accurate recording, the importance of these businesses is likely to remain under-represented; because these businesses operate on the edge of the formal economy, and because of the scale on which they operate they are also likely to remain unable to advocate for greater representation and recognition.

It must also be noted that perhaps those involved in small scale buying and processing of NTFPs do not want to be helped, but are content to operate on their current scale without any desire to grow. Businesses may also see involvement with government bodies as a disadvantage as it might bring with it a stricter regulatory regime. Without this understanding, access to authority would not necessarily be able to deliver positive results.

Regulations restrict the marketing of products, either controlling the way that processing is carried out or the way that products can be marketed or sold. Access to the authority that sets these regulations is of vital importance in ensuring that regulation is fair and workable. In particular, Finnish processors found that they were restricted in the way that they could describe their products. Products with high levels of antioxidants could be described as such, but not as having the health properties of antioxidants. Without highly informed consumers, the advantage of a wild harvested product over another kind of product may be difficult to communicate. In order to carry advertising about health giving qualities, processors would have to engage in costly clinical trials. Only very large-scale processors such as Benecol[37] are able to afford these trials and claim the benefits. Similarly small producers are disadvantaged by hygiene regulations: while these regulations are not particularly costly for large scale producers to implement, they may be proportionally prohibitive for small producers. In neither case do small producers form a large or powerful enough lobby to influence the formation of these kinds of regulations.

Those buyers and processors who have grown into larger businesses have done so with the aid of a public profile that outweighs what might be expected of businesses of that size. In part this public profile is attributable to the high profile exposure in the press that chefs and cookery writers and presenters have given wild foods. These businesses have also capitalised on existing public interest and a certain novelty value that wild foods have to place regular articles in the Scottish press and occasional radio and TV appearances (Anon, 1999; Clark, 2002; Reynolds, 2003a).

As well as capitalising on their own public profiles, UK buyers and processors have undoubtedly benefited from high profile exposure in the press by chefs, cookery writers and presenters. In this case the access to markets that Scottish buyers and processors have gained has been on the back of authority borrowed from those in the public eye. Some buyers and processors have not specifically courted the exposure that has been given to wild food in recent years, but have

[37] As Benecol had wood pulp among its original ingredients and therefore a timber processing by product rather than a non timber forest product by the definition used in this thesis.

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and it is those who have taken advantage of being in a position where they have valuable business knowledge combined with some knowledge of the products that predominate (accidental entrepreneurs).

Economic necessity may dictate that individuals become involved in buying or processing activity, but to choose NTFPs as an additional source of income also requires a certain amount of knowledge of the species to be used and the market to be entered. This knowledge has somehow to be gained, whether it is learned from relatives and friends, as is often the case with commercial harvesters; or whether it is something that has been a hobby, which is now becoming a business. This knowledge and the opportunity to use NTFPs as a source of income or as a household resource do come through social identity.

Those operating NTFP micro businesses often do so in part as a strategy to deal with economic uncertainty; using skills that are transferable between several modes of income generation. This chapter has previously discussed the importance of pluriactivity for those involved in NTFP enterprises, operating in this way is a sort of social identity, where individuals are not dependant on a single employer for their livelihood.

Alongside those who operate as both harvesters and buyers or processors, either for their own use or for sale, are those who operate solely as buyers or processors. As previously discussed, the example of the growth of new wild mushroom buying companies where knowledge gained from established companies has been used to form new ones. The maintenance of the link to the forest for the consumer is very important for wild foods. These new businesses, beginning with the knowledge of market rather than the knowledge of the product have to ensure that the identification of the previous business as being 'close to the land' is also carried over to the new business. To some extent all NTFP buying and processing businesses that are not themselves involved in harvesting are borrowing the social identity of the harvesters, who sell to them as knowledgeable stewards of the countryside, as well as building their own identities as processors.

The marketing of products is also dependent on knowledge gained by social identity. Profits from selling direct to the end user are far higher than those to be made when the harvesters are just the first link in the market chain. Harvesters who are able to use family or social contacts to sell their mushrooms direct to high-end restaurants (even in some cases using a courier to take the mushrooms to London overnight, Field notes, 1998) are able to make more money than those who sell to the local dealer. However, with direct selling there is also a payoff: to sell direct a harvester must be able to guarantee consistency of supply and quality and also has to deal with the logistics of supplying the goods to the end user. The possibilities of supplying direct vary greatly between products. The wild mushroom trade is relatively easy, with opportunities for sales to local restaurants and greengrocers. In the case of floral greens, the market structure is more complex. In the UK the majority of florists are supplied from Amsterdam, reducing the opportunities for supplying local florists directly. As discussed earlier supplying sufficient volume is often an obstacle to harvesters who would like to sell direct to wholesalers without first building up a network of other harvesters who would supply them exclusively (I&M 6).

Social identity is important for marketing of goods not only because of the knowledge that it allows access to, but also because of the image it allows a business to portray to their customers. Baxter's of Speyside, for instance, a large firm dealing mainly in mass-market food products and a comparatively small amount of wild food preserves, promotes its roots as a family firm, giving the impression of a business at least formed from a cottage industry and using knowledge built up over generations.

Social identity and use of cooperation

Cooperation and networking is sometimes the key to successful trading. Many cases exist of NTFP businesses sharing distribution networks with other businesses with a similar client base. A Scottish mushroom dealer at one time shared a distribution network with a dealer in dived scallops to supply the same high quality restaurants (Hyman, 2000). In Finland a berry buyer's cooperative is able to share distribution and negotiate better prices for the combined stock of a number of buyers than they would be able to negotiate individually (Finn 9). Also in Finland, the youth organisation 4H acts as a clearing house for harvesters,

buying in small quantities of products from harvesters and selling them on to processing companies in viable quantities (Finn 2). Given the similarly large travelling distances to markets in many parts of Scotland, cooperatives could prove highly effective at bringing fairly small quantities of product to market, and to enable processing that might require the use of expensive equipment to take place centrally.

Co-operatives have only recently become politically acceptable again in Finland, after the collapse of communism over the border in Russia. Following World War Two the geographical proximity of Russia made any initiatives such as cooperatives that could be seen as being close to communism undesirable. Previous to this Finland had had many co-operatives and is now beginning to rediscover the movement (Finn 10). In the same period co-operatives in Scotland have also been in decline before recently regaining some popularity.

Access through the negotiation of other social relations

Buyers and processors find themselves, through their possession of market knowledge, in a relatively strong position over those further down the market chain. Both harvesters and landowners are generally dependent on buyers and processors to bring their goods to market. While this position appears to sit fairly easily with harvesters, landowners consider the position to be less equitable because at present they gain little from NTFP harvesting and therefore do not value the knowledge that contractors use to bring goods to market. Contractors are able to dictate relations with both of these groups to a considerable extent. The dealings that contractors have with landowners are often over products that are harvested along with timber – such as foliage, or that result in some disturbance – such as moss harvesting. These relations therefore, are often dependent on pre-existing relationships, where the contractor has dealings with the landowner relating to another product. Contractors therefore initiate the majority of dealings through other business relationships.

As well as these more formal relationships with contractors, many more informal relationships exist, relying on a system of favours and counter favours. To give one example, a native tree and plant nursery is given permission to collect seed on estate land in exchange for supplying the estate with a small percentage of

the young trees grown on from the seed. This relationship exists because the nursery business was at one time located close to the estate and the estate owner and the nurseryman met in the course of other local activities (Barbour, 2004). Other exchange involves a crofter giving eggs to a processor in return for preserves (Bates, 2004). These sorts of relationships, existing for the convenience of both parties, are extremely common and exist mainly because the parties live and work in close proximity to each other. The relationships usually involve the exchange of goods which are in surplus or of no particular use to one party, but which are valuable to the other, given in exchange for goods of similar value. The benefit to each party far outweighs the goods they give in exchange.

As geographical association can be an advantage to buyers and processors, lack of geographical association can also be a disadvantage. In Finland particularly, businesses tend to be geographically distant from each other because of the dispersed nature of the population. Businesses therefore may not even be aware of each other and hence have little opportunity for co-operation or collaboration (Finn 8).

As with harvesting, social processes operate on NTFP buying and processing in very subtle way. The importance of the informal economy in rural areas in general and NTFP use in particular lends additional layers of complexity and also of mutual agreement to turn a blind eye to informal economy practices. This reliance on the informal economy as a mechanism for using NTFPs is therefore extremely important to the continuance of current practices.

Structural reflection on Ribot and Peluso's framework

In addition to some of the challenges experienced and described in Chapter Two in dividing certain issues between the categories of access laid out by Ribot and Peluso, an additional challenge worth stressing here is in dividing issues between each of the stakeholder groups described in each chapter. In this instance it is soon clear that a strong cross over exists between harvesters (the focus of the previous chapter) and processors and buyers (the focus here). Often an issue addressed in this chapter tells one side of a story that will also be told from a different point of view in another. For instance, the role of support

from government bodies and non-government support organisations poses inter-related issues of access to capital, knowledge and authority with each stakeholder group, including those providing (or not providing) services.

An additional issue is that stakeholder groups are not always clearly delineated, and in fact are often overlapping – the same individual is often a landowner or manager, harvester, processor and consumer. This is not so much a problem of Ribot and Peluso's framework, but more a problem of its application to a complex, real world situation. Whilst these stories can be drawn together in final conclusion, there is always a balance to be sought in avoiding repetition while acknowledging other viewpoints. While these potential repetitions do render Ribot and Peluso's structure slightly unwieldy when applied to multiple stakeholders it also serves to stress the relevance of the overlapping nature of the stakeholder groups.

Summary and key points

The first section of this chapter describes buying and processing activity as it exists in Scotland and also draws on the example of Finland to review the similarities and differences with a country where NTFPs are used to a far greater extent. A workshop involving landowners and some NTFP businesses is also used to explore the interaction between NTFP 'producers' (landowners) and NTFP enterprises. The second section draws on these two studies and on other evidence from Scotland and elsewhere to explore how access to resources impacts on NTFP enterprises, and particularly on their relations with other groups such as harvesters, landowners, wholesalers and consumers.

The way in which processors and buyers access resources is governed firstly by the degree of commercial intent and secondly by the size of the enterprise. The issues associated with non-commercial processing, or very small-scale commercial intent are often synonymous with those associated with harvesting for non-commercial purposes. Commercial activity brings a new set of issues, which change with the scale of the business.

The widespread processing of NTFPs by individuals gives a set of non-enterprise related factors which need to be considered alongside those who

do operate as enterprises. Often it is the same individuals or family groups carrying out the processing as who are involved in harvesting. Smaller processors such as craft producers find themselves in much the same position as harvesters, without access to power and without representation to lobby on their behalf.

The continuum of processing activity from domestic to commercial use continues through those who operate somewhere in the middle, selling small quantities of product or exchanging their products for goods or and those who operate in the grey market. Grey market businesses are undoubtedly services very important in the marketing of NTFPs and in maintaining livelihoods, but have little incentive to enter formal markets because of the imposition of regulation that this would bring and the expectation of growth, taking away the flexibility that grey market enterprises offer.

The contribution of NTFP micro businesses to rural economies is poorly understood. It seems likely that as micro businesses often contribute in ways that are not measured by conventional surveys – either because businesses operate outside the formal economy or partly on the basis of non-monetary exchange – their contribution is therefore under-valued. The concentration of support services and funds on larger enterprises not only does not support the contribution that micro enterprises make, but over-values the contribution of larger businesses. Micro businesses provide employment and contribute to local livelihoods without subsidy or support, whereas large businesses receiving support may take many years to recoup the investment made to create jobs – or relocate or even fail before the investment is reclaimed. This opposition of micro businesses and large enterprises is in itself somewhat unhelpful, as the range of NTFP buyers and processors is broad and each one contributes to livelihoods and local economies in different ways and to different extents. While some of these businesses may wish to expand others do not there is also an ideological question about whether only those businesses that conform to a particular model should be supported. Recognition of the contribution that these businesses make may be as important as support for those businesses that do wish to expand, and for activity to be able to continue to exist in a grey market than cease to exist if regulated.

Medium sized buyers and processors are often the true middle men, largely dependant on harvesters for access to resources and on customers for demand for their goods. Influence is possible in both directions; indeed buyers have formed the shape of the harvester population in many ways. Buyers are generally in a position of power relative to landowners and harvesters. The market knowledge that buyers and processors hold being more of a rarity than the ownership of the resources or knowledge and skills needed to harvest.

Processors and buyers are able through media influence and access to certain sectors of the market, using figureheads and trendsetters to gain influence disproportionate to the size of the sector and the businesses. Medium sized processors and buyers also have a greater ability to organise themselves into pressure groups to influence policy but do not necessarily have the economic influence to achieve much success. Some Scottish processors are also in a position to access powerful landowners lobbies, based as they are on estates and in land-owning families. Other buyers find themselves at the mercy of decisions made on land management without any influence.

Processors and buyers can therefore be considered to be the visible manifestation of the NTFP trade, with harvesters more often hidden. To some extent this position of being the visible face of harvesting is an advantage: appearances can be made in the press without the danger of revealing illicit sources of income or harvesting sites and the value of the harvest can be talked up to raise the profile of the business. Businesses are able to sell the images and social identities of their products that the harvesters help to generate, of wildness, naturalness and wholesomeness.

Being the public face of harvesting is also something of a position of vulnerability. Conservation lobbies are often keen to use buyers as a link to influencing harvesting practice, such as through the proposals for buyer licensing in British Colombia. Buyers in the UK have become the target of the Inland Revenue to become the proxy regulators of harvesters. Similarly, buyers and processors are often the target of industry campaigns and licensing

schemes in the floral industry. Without customer demand, however these simply increase costs for the buyer or processor without adding a market advantage.

Buyers and processors therefore earn the name 'middlemen' with all the attendant advantages and disadvantages. The idea that middlemen as a group could be cut out to increase the returns to harvesters and landowners and to reduce end prices is simply not tenable given the way that markets are currently structured. They act as a key group in facilitating the use of NTFPs for consumers, landowners and manager and harvesters alike. In order to 'cut out the middleman' markets would need to be much more local and an alternative layer of coordination and organisation would be needed to collectively process and distribute goods.

The relationship between buyers and landowners is a good example of how the importance of middlemen can be underestimated. The knowledge that buyers have enables them to market goods that landowners are unable to make a return on. Landowners are made powerless by their lack of knowledge of markets and of management for NTFPs which might improve yields, without an input to the production of NTFPs to legitimate their claim over the resource in the eyes of both buyers and harvesters. This illustrates a theme to be taken up in the following chapter, the focus of which is to be landowners and managers.

CHAPTER 4: LAND MANAGEMENT

This chapter deals with how land is managed and the impacts that this has on the availability and accessibility of NTFPs. The availability of NTFP resources can be influenced both deliberately and inadvertently through land management, influencing the abundance and accessibility of the resource and the claims of different groups to harvesting rights. Section 1 describes the ways in which land in Scotland is owned and managed and the impacts that policy decisions and their implementation have had on forested landscapes and also provides some specific examples of how management impacts on the presence of NTFPs and determines who they are available to. Section 2 details the issues relating to access to resources, focusing particularly on the paradox that while landowners may own the land and everything in and on it, without the knowledge to use them, this does not necessarily mean that NTFPs are accessible to them.

As this chapter will explore, landowners are currently a largely passive group in the utilisation of NTFPs. Nonetheless, even such passive land ownership impacts, even if largely theoretically, on all activity taking placed on the land, meaning that many issues relating to land ownership and NTFPs have already been raised in previous chapters on harvesters and processors and buyers. This chapter therefore often refers back to issues raised in previous chapters but now presents them from the point of view of the landowner.

SECTION 1: LAND MANAGEMENT AND NTFPS

The variety in the way that land is owned and managed in Scotland gives rise to a range of management impacts on the availability of NTFPs for harvest, both through intentional and inadvertent actions. The degree to which the management of NTFPs is an active objective also varies considerably. The following section details factors in land ownership and management, showing how land ownership (including size of holding and ownership type) and management (including management regime and management objectives) lead to differing availability, variety and yield of NTFPs

Size of holding

Periodically, the Forestry Commission publishes an inventory of woodlands (over 2ha in area) in Scotland, which reveals information on size, ownership, species and age structure and productivity. What the latest survey tells us about the size of holdings is that the majority of woodlands are very small, the median area being 2-10 ha relative to a mean of 70.2ha. Woodlands in Forestry Commission ownership tend to be significantly larger (See Table 14 below).

Table 14: Average size of woodlands over 2ha. After Forestry Commission (2001)

	Average Size		
	Overall	Forestry Commission ownership	Other ownerships.
Mean	70.2 ha	348.9 ha	35.4 ha
Median	2-10 ha	20-50 ha	<10ha

In addition to these woodlands of over 2ha there are also 64,525 smaller woodlands with a mean area of .44ha, though data on the ownership of these woodlands is not available (Forestry Commission, 2001). The inventory does not detail the number and size of holdings in individual ownerships and therefore it is not possible to tell whether these woodlands are being managed individually or as a part of groups. However, from Wightman's data on land ownership it could be surmised that the majority landowners own more than one woodland holding. Wightman's data shows that of private land:

- 66 landowners have estates larger than 14,852ha
- 120 landowners have estates larger than 8498 ha
- 343 landowners have estates larger than 485 ha (Wightman, 2003)

These figures show that landholdings range from very large estates to many small holdings, and that the majority of woodlands are small. This has several implications; first that most woodland will be under the ownership of a landowner who also owns other woodlands and therefore while single

woodlands may not provide marketable quantities of NTFPs, woodlands held under a single ownership may collectively be able to produce more significant quantities. Secondly, land ownership patterns are relatively complex so it may be difficult for harvesters to identify the ownership of a particular piece of land.

Ownership type

The type of ownership land is under, linked to the objectives different types of landowners have, influences the management objectives for a particular site. The structure of land ownership therefore influences the availability and accessibility of NTFP resources across the country. The Forestry Commission's national inventory of woodland and trees provides a useful breakdown of ownership (see Table 15 below).

Table 15: Forest and woodland ownership type by percentage of land area. After Forestry Commission (2001).

Ownership Type	%
Private	
Personal	42.6
Business	8.0
Forestry or timber business	2.2
Charity	1.1
Public	
Local authority	0.9
Forestry Commission	43.1
Other public	1.1
Community ownership or common land[38]	<1
Unidentified	1.0

Public bodies such as the Forestry Commission and its management arm, Forest Enterprise, and Scottish Natural Heritage,[39] have several roles, both in terms of the land that they themselves manage, the control that they have over the way that others manage land (through designations and also the distribution of funding and subsidy) and the role that both organisations take to promote the use of the natural environment. These organisations therefore appear twice in this analysis, first in this chapter for their direct and indirect roles in the

38 A more recent survey put community ownership of woodland at 3,555ha (0.2% of wooded land area), with communities in operational control of a total of 21,995ha of woodland (1.7% of wooded land area) (MacIntyre and Marshall, 2003).

39 Although Scottish Natural Heritage is a quasi-non government organisation, in practice due in particular to some of the roles that it holds, such as the selection and regulation of designated sites, mean that it operates as a government agency.

management and regulation of land, and again Chapter Five for their role as support organisations.

Private landowners' objectives and management regimes vary greatly according to the size of the holding - though of course their primary interest must be to meet their own objectives. The Scottish NGOs landowners are generally conservation orientated – whether for a particular group of species or for habitat protection in general. Land under community ownership varies greatly in size of holding and objectives from recreational use to commercial timber production. Given this variety of public, private (individual or investment), NGO and community ownership it is impossible to make generalisations about landowners. In Scotland the two largest groups in land ownership are the Forestry Commission and private individuals (see Table 15). In this chapter the term 'landowner' is generally used to refer to private individual landowners unless otherwise stated. Public land ownership is dealt with in more detail in Chapter Five.

Management regime

Forest management has gone through several guises in the past fifty years and in practice, most landowners operate a combination of methods. The idea of profit maximisation – the use of the land to produce the greatest return, led to relatively short rotations of densely planted conifer, producing a high volume but low quality crop. As prices for low quality pulpwood fall and competition from Scandinavia and the Baltic States prove difficult to match, landowners have had to look to other sources of income. With the increasing realisation of the importance of forests for recreational use and providing public benefit, profit maximisation also involves reaping subsidy for providing public good as providing strategic timber resources did in the past. Plantations of non-native species have also proved poor in terms of wildlife benefit, and some landowners now aim to manage their land for maximum conservation benefit. This strategy also gives an uneven return – with some subsidy available at the beginning of the rotation and the majority of the return at the sale of the timber. Continuous cover forestry seeks to address this issue and provide better wildlife habitat by providing a continuous return from a variety of types of timber from a forest of uneven age and species structure. Multi-objective forestry seeks to provide a

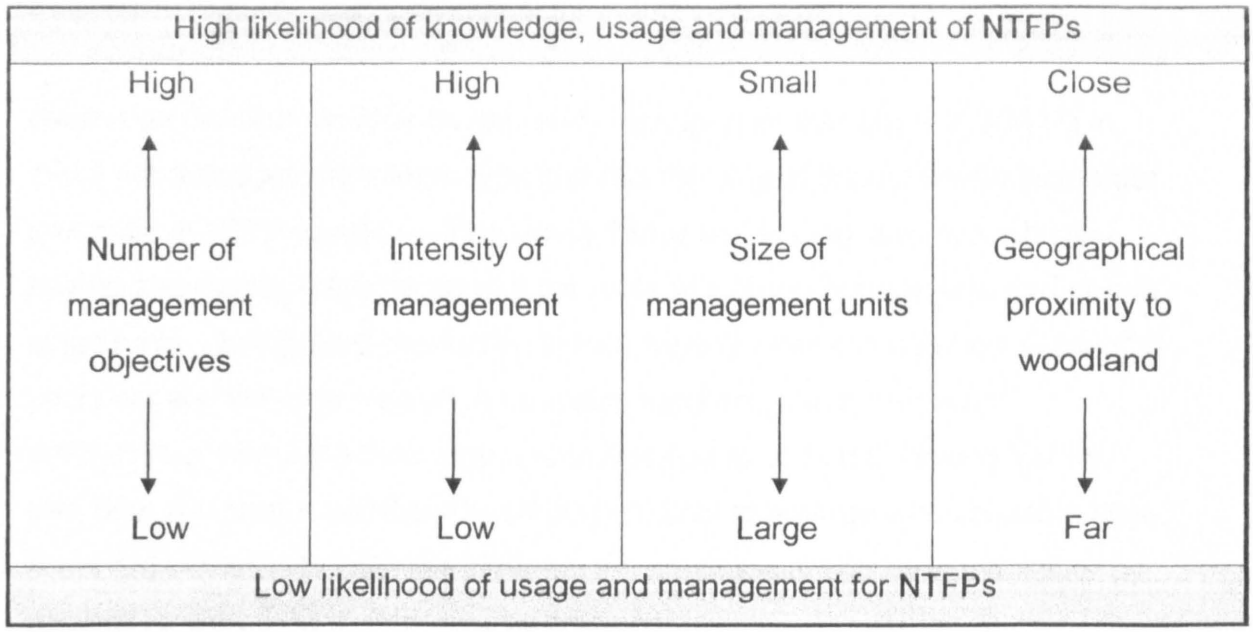
range of benefits – wildlife, timber, recreation etc from an area of land – though not necessarily stemming from the same piece of land. Each area of land is used for the most suitable purpose and providing a mosaic of forest types and benefits across the area.

The woodland manager will impact on the likelihood of their knowing the woodland intimately for all its ecological characteristics and all the habitat niches within it – whether they are a remote management company, a locally based manager, the owner themselves or a direct employee, a tenant or crofter. The number and variety of management objectives, the intensity of the management regime that they require, the consequent size of the management units and the regularity of visits needed, will influence the manager's knowledge of the site. These factors alone are insufficient without accompanying knowledge of how this information can be put to use. Figure 8 shows the impacts of management regimes on the likelihood of management for NTFPs.

Perhaps the greatest influence on the likelihood of NTFP harvests being an objective of management is the intensity with which the woodland is managed. Low intensity management systems with infrequent interventions and larger unit areas are likely to work best for a low number of objectives. The management of NTFPs requires a degree of specialist knowledge of the ecology of the species in question and of the biophysical characteristics of the site that is rarely found if the site is subject to low intensity management. In practical terms, the likelihood of management regimes implementing specific actions to benefit the presence or yield of NTFP species is dependant first on the manager having an awareness of the use of or markets for NTFP species and second on their having sufficient familiarity with the site to be aware of the presence of NTFP species. The overall management objectives of the site will then influence how high on the priority list NTFP management actions are placed.

High intensity of management is generally a positive influence on the availability of NTFPs. Frequent use of chemical fertilisers, pesticides and weed killers would be highly undesirable to NTFPs users but this is rare in Scottish forests. Chemical interventions tend to be confined to the first few years after planting when woodlands are relatively unproductive for NTFP species.

Figure 8: Impacts of management regime on management for NTFPs



Without entering in to a detailed discussion of forest management techniques and impacts on NTFP species, it is worth noting in general terms, how management can influence yields.[40] High yields of some NTFPs species can result from an inadvertent combination of management decisions and the biophysical characteristics of the site. This inadvertent encouragement of NTFP species is in fact the main form of management that NTFPs receive in Scotland and may well go un-noted except by harvesters.

To give an example, the planting of monoculture blocks of some species of non-native trees may produce conditions in which some native species of mycorrhizal fungi flourish. There tend to be fewer fungi that can develop mycorrhizal relationships with non-native tree species and so those that can may find less competition from other fungal species than they would if they were living in collaboration with a native tree species. Further advantage may be gained from high planting densities and lack of management interventions such as brashing (removing lower branches to give a stronger and straighter main stem) and thinning. The conditions that this gives rise to – tightly packed trees

[40] For discussion of the influence of management actions of fungi yields see (Chibisov, 1999; Egli and Ayer, 1997; Kuyper, 1989; Pilz et al.; Rühling and Tyler, 1991) information on the implications of woodland management for berry yields can be found in the following references: (Chibisov, 1999; Ihalainen et al., 2003)

with branches low to the ground – can provide very beneficial microclimates for fungi for harvesters prepared to look for them.

Given that Scottish woodlands are rarely managed specifically with NTFPs in mind, the management intervention that has the largest impact on the incidental presence of NTFP species will be felling. Many edible fungi are mycorrhizal – having a symbiotic relationship with the roots of a tree – and are also mid or late stage fungi – being most productive in their fruiting when the tree host is over 20 years old and well established. As a result, fungi may be at their most productive at about the time when the tree is due to be felled. Having lost its tree host, the fungus will then die off and will only re-emerge when suitable new hosts are available to colonise either by the presence of spores in the soil or by vegetative reproduction from nearby colonies.

While felling will therefore have a negative impact on the availability of these species associated with mature trees, it may in time have an impact on other species. After felling light levels at the forest floor will be for higher and woodland edge species will be able to colonise the edges of clearings. Many woodland herbs fall in to this category, so the loss of habitat for one type of NTFP results in the habitat creation for another. Without communication between land managers and harvesters these losses and gains cannot be managed effectively.

Management objectives

Managing a woodland for NTFPs requires an in depth knowledge of soils and microclimatic effects that is unlikely to be held by all but the most intensively managed woodlands. Woodlands managed for low quality pulpwood are rarely visited by managers and receive little intervention over the course of the rotation. These woodlands are also likely to be managed for a single primary purpose, having lower wildlife and amenity value than other types of woodland. Woodlands with a wider range of management objectives are likely to receive a wider range of interventions, either to improve yields and quality of timber, to improve habitats for wildlife (encouraging food sources and creating shelter), or to improve amenity value by opening up access or creating visual interest. Woodlands managed for products that will largely be used on site (such as

fencing material) provide perhaps the greatest opportunity for NTFP use. These woodlands are likely to have a fairly wide range of management objectives and will provide a range of habitats for NTFPs. Even if their presence of is incidental, NTFPs are more likely to be noted by managers who visit regularly and are able to make small interventions to benefit the yield of different species.

Figure 9 shows how ownership types pursuing particular management objectives and are likely to influence whether the use of NTFPs is encouraged or whether active management takes place.

Figure 9: Typology of land ownership regimes and NTFP use.

<table>
<tr><td colspan="2" rowspan="2">Type of owner</td><td colspan="4">Management objectives</td></tr>
<tr><td>Commercial Timber</td><td>Recreation</td><td>Wildlife</td><td>Domestic use</td></tr>
<tr><td rowspan="5">Size of holding ↑</td><td>Large private estate</td><td colspan="3">Some personal use by owners – commercial and non-commercial use by others, generally without permission.</td><td></td></tr>
<tr><td>State holding</td><td colspan="3">Non-commercial use and appreciation encouraged – commercial use occasionally condoned.</td><td></td></tr>
<tr><td>NGO</td><td></td><td colspan="2">All consumptive use generally discouraged – appreciation encouraged</td><td></td></tr>
<tr><td>Small private owner</td><td></td><td></td><td></td><td>Most likely to use NTFPs domestically or for livelihood benefit.</td></tr>
<tr><td></td><td colspan="4">Intensity of NTFP use →</td></tr>
</table>

The size of holding, ownership type, management regime and management objectives result in particular forest types, percentage tree cover and age and species make-up. These factors in turn impact on the availability of NTFP species.

Forest Type

Despite recent changes in policy, the majority of forest land in Scotland is under conifers, particularly land owned by the Forestry Commission. Of this land 81% is under conifers (compared to 61.8% in other ownerships), and of that 60% is under a single species, Sitka spruce. The Millennium Survey of semi-natural woodland gives a higher estimate of the percentage of woodland in Scotland that could be called semi-natural to other surveys, in the main because the definition used is based on the appearance of the woodland rather than the management history and does not take into account whether the woodland is of predominantly native species (See Table 16). This survey puts native woodland at 27.85% of all woodland, and around 5% of the land area of Scotland. Scottish Natural Heritage gives a lower figure of 3.5% of the land area of Scotland based on a definition of woodlands created mainly through natural regeneration and comprised mainly of native species (Hall, 2001).

Table 16: Woodland cover. Adapted from (Scotland's Woods).

% of woodland cover		Tree types				
		Conifer	Broadleaf	Mixed	Scrub	Total
Woodland types	Semi-Natural	2.72	20.88	3.32	0.51	27.85
	Mixed	0.91	0.28	3.99	0	5.17
	Plantation	64.81	0.68	0.71	0	66.21
	Urban	<0.01	0.29	0.48	0	0.82
	Total	68.44	22.13	8.5	0.51	100

Characteristics of the woodland – such as the variety in the species make-up and whether species are of native or non-native origin, and the age structure and density – will all affect the availability and productivity of NTFPs. Given these factors, the characteristics of Scotland's woodlands combine to give a not particularly promising picture of the availability of NTFPs and the likelihood that they will be managed for NTFPs. Individual woodlands are small – and so are unlikely to produce marketable quantities of NTFPs. The size of units in which forests are managed, however, is large. Small individual woodlands are managed as a part of large estates and larger woodlands are in public ownership. Forest managers are unlikely to have sufficient knowledge of woodlands to be able to identify NTFPs and opportunities to encourage them.

Additionally, the majority of Scotland's forests are mono-crop, single-age conifer plantations and so while conditions may occasionally be right for some species to thrive this is rarely the case.

Some qualification should be made to the distinction in attitudes to the contribution to livelihood between private land-owning individuals and other groups. Landowners are not a homogenous group and contain great variety in social identities and sizes of holding. A distinction should be made between large and small landowners, with the latter behaving in some respects more like harvesters and attaching greater livelihood importance to NTFPs. In addition, small landowners are more likely to manage their woodlands themselves and therefore are also more likely to know their woodlands in more detail and, if they have an awareness of the uses of wild products, to be able to use these woodlands more intensively. Small woodland owners may also see the harvesting of NTFPs as a problem because goods that they would use themselves are no longer available to them due to harvesting by others.

These conditions do help to explain the structure of the NTFP industry. Individual harvesters are able to access marketable or useable quantities of products by harvesting in multiple woodlands. Harvesters develop the specific knowledge of the ecological conditions preferred by the species that they harvest and are able to identify woodlands and areas within woodlands that will be productive. Forest managers on the other hand, develop a familiarity with woodlands that is based on the necessities of the management objectives that are in place.

The characteristics of Scottish woodlands described above are shaped by land ownership patterns and the models of management that are adopted. In turn, land ownership patterns and management models (and the existing forest type) are shaped by historical and more recent government policy. The following section describes in brief how policy has impacted on the presence and management of NTFP species.

Policy impacts on the presence of NTFP species and management of woodlands.

Until recently, Scotland was subject to a legally anachronistic system of feudal tenure, with a hierarchy of superiors and vassals, with God at the top of the pyramid, represented by the Crown. Landowners were vassals of the Crown but themselves may become feudal superiors by retaining specific controls over land when it was sold. The feudal system of land tenure was overturned in 2000 with the passage of the Abolition of Feudal Tenure etc. (Scotland) Act, after a process of gradual erosion, including the end of new feudal tenures with the Land Tenure Reform (Scotland) Act 1974.

Wightman reports that the number of landowners began to contract from the 17th Century, until that point having expanded. In the mid 1700s feudal tenure was reformed, allowing the holders of feus to sell their charters without having to obtain the permission of their feudal superiors. As the sale of land was now much easier to achieve, the interests of those coming into land ownership changed, leading to the use of land for commercial sheep grazing and the clearance of tenants from the land. As the size of estates increased the numbers of landowners continued to decline, with 90% of the land being owned by less than 1,500 people throughout the 1800s. The number of estates over 1000 acres began to decline again in the 1900s, in part due to the acquisition of land by government agencies. Central control of land management for strategic objectives led to greater uniformity in species make-up and management in general.

More recent changes have been the increase in land ownership by businesses (rather than private individuals) and also by NGOs (Wightman, 1996). Even more recently the ownership of land by communities or groups of individuals, although not yet having had a significant impact on the proportion of land in private ownership, *has* had a significant impact on opening up the possibilities for land ownership and management. Not only has the debate on land reform moved on to the point where the Land Reform (Scotland) Act 2003 was passed, giving communities the right to buy private land, but many more communities have chosen instead of buying land outright to make management agreements

with landowners. These new kinds of owners have significantly different management objectives than previous landowners.

Land tenure has far reaching impacts not only on the ownership and tenanting of land, but also on the way that land is managed: where trees are planted; what species are planted at what density; what intensity of management they will receive; and how long the rotation is likely to be. For instance, until recently, tenants were not automatically in possession of rights to timber and may have been forced to give a proportion of the yield to the landowner. Despite their use to the tenant as shelter or for NTFPs during the rotation, the lack of ownership of the timber is an automatic disincentive to plant. This issue has recently been addressed through the granting tenants full rights to timber by the (2003a). Alongside the impacts of change in land tenure and land ownership patterns – which until the 1970's could be described as a neglect of policy rather than active attempts to influence land use – there have also been deliberate changes in forestry policy which have had significant impacts on forest cover and form in Scotland. The beginning of practical policy intervention in forestry by the state began with the formation of the Forestry Commission in 1919, against a background of depleted timber resources from estate forestry following the First World War. Estate forests had produced timber for a variety of purposes, including timber of structural quality, but now the Forestry Commission had an enormous impact on the structure, appearance and quantity of forestry in the landscape.

Forestry policy following timber shortages during the First World War encouraged fast growing species, particularly exotics such as Sitka and Norway spruce and lodgepole pine, available to harvest after a relatively short rotation (between 40 and 60 years) and producing high volumes of timber. The result of this concentration on volume was that the timber produced was of low quality and consequently Britain currently has a major deficit of structural quality timber. This management objective also led to other concerns: monoculture plantations limiting the biological diversity available in woodlands; tax concessions leading to forestry planted in completely unsuitable locations; and valuable habitats being damaged. Additionally, concern grew that large monoculture plantations were visually intrusive and imposed on the landscape rather than working with

the natural contours of the land and with the variations of species that would be expected to occur with proximity to watercourses, altitude and so forth. in natural or semi-natural forest. The resulting public opinion of forestry, particularly in those areas with heavy coverage of plantation forest, was poor and demands for other management objectives, particularly to make forests more attractive places for public recreation, have grown. As timber prices continue to decline, recreational value has become an important justification for the continued spending of government funds on state forestry.

The desire for more native woodlands and more diverse woodlands can not been seen as a desire to return to a golden age of Scottish woodlands – which have been in decline since populations spread after the last ice age. There probably never has been a time when woodlands have been managed productively for a wide range of products and benefits. Instead there have been periods of management for specific purposes, for instance oak coppice for pit props and to feed the iron smelting industry in the mid 1800s (Stewart, 2003b).[41] Consequently, while there might appear to be an element of nostalgia about the native woodland movement, this is largely misplaced. Conservation and restoration of habitats, as well as rural development objectives, are the main drivers for a new kind of woodlands.

Management influences how species relate through age and species structure. In Scotland, the woodland resource is primarily made up of plantations of non-native species promoting a very different understory and ground flora to that found in native woodlands. As a general rule the lower the tree species diversity, the lower the diversity of ground flora. As described earlier this does occasionally have the effect of producing ideal conditions for single or particular useful species together with reduced competition from other species. Both conservation and economic concerns have played a part in recent policy changes directed towards greater variety of species of planting, and some

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[41] The historical use of Scotland's woods for resources other than timber is poorly documented and neglected as an area of study. For instance, Stewart states that 'A use was found for every part of all trees and shrubs, large and small [...] Dyes could be procured from different parts of a tree, with alder alone yielding five colours' (Stewart, 2003a). Although historians seem sure that other products were used, timber and products obtainable from trees are the dominant focus of study rather than woodland products in general. It is perhaps a reflection of who used these products and the materials that are available to historians (such as estate records and maps), other uses are so unknown and neglected. See Appendix Nine for discussion of the role of gender in determining how the use of NTFPs is recorded and therefore viewed historically.

moves towards systems of continuous cover forestry and stands of uneven age and species structure. Management for a wider range of objectives, with recreation and conservation at their head, is also encouraged through policy and particularly through grants programmes. The Scottish Forestry Grants scheme is the main line of subsidy to forestry in Scotland and now includes an element of stewardship grant for actions including: improving timber quality, improving woodland biodiversity, developing alternatives to clear felling, woodland recreation and developing community involvement. Management for NTFPs, however, is still some way off the agenda.

Case studies

Having discussed how NTFPs are managed or not managed by landowners and managers, and how their activities can impact on available yields, I will now go on to discuss two studies analysing landowners' and managers' attitudes to management for NTFPs and assessing the potential for increasing levels of management for NTFPs in Scottish woodlands.

Lanark workshop on woodland management

The Lanark workshop on woodland management involved landowners and managers meeting as a part of a continuing professional development seminar (LW3), where they discussed issues relating to the management of NTFPs. Several issues emerged from the workshop, the first of which was an overwhelming feeling of ignorance of the value of NTFPs and of methods to manage them to improve yields. Landowners felt that in this respect the harvesters probably knew their woods better than they themselves did.

> I expect they know our woodlands pretty well, I expect they are there already. (LW3)

While in this position of ignorance landowners felt it was difficult to anything other than accept the current situation – tacitly or explicitly allowing harvesting to be conducted by individuals with little benefit to the landowner as a result. This acceptance was made on the proviso that there was no damage to the woodland or the resource. However, in order to make any kind of informed

judgement on damage to the resource it is necessary to be aware of what harvesting practices are being used, how much is being harvested and what kind of damage could result. A participant from the Woodland Trust reported using agreements with harvesters in order to monitor harvests, rather than as a way of generating income.

At present agreements with harvesters were seen as being likely to be more costly to administer than they would deliver in terms of a return.

> I have some experience with rhododendron collection and moss collection and with our liability as Forest Enterprise, it costs much more to controls these contracts than we would ever make on them, so that is something to take account of the cost of letting people in. (LW3)

The manager speaking in the quotation above referred to the cost of their liability as landowners for the safety of people who are on their land, and this is something that other public sector and not-for-profit landowners also mentioned. In addition, registered charities have a responsibility not to dispose of assets at no cost and so need careful justifications of decisions to allow commercial harvesting without any financial return.

Gaining control of the harvest was seen as a priority to landowners and making agreements with harvesters was seen as a way of limiting who was involved with harvesting, making the harvest self policing and potentially providing some income or non-monetary return. Several longer-term reasons were given for needing to gain control of the harvest including, for example; to make agreements that may lead to a dialogue with harvesters and could then be developed to improve yields to an extent that it would one day be possible to gain an income from the harvesting activity. At the same time it was recognised that agreements need not be made on the basis of a monetary transaction. Many landowners make agreements for aspects of management that are made on the basis of an exchange of goods or services.

> The guy who chops up all the trees on my bit of ground takes it off, keeps my woods tidied up for me and keeps my log shed filled and gets all the firewood he can deliver to his customers. It's certainly non-cash economy. You don't get taxed on non-cash economy, nobody cares. (LW3).

The financial benefits to the landowner and the harvester of this type arrangement are clear – these informal activities are not taxed or recorded. Landowners were of the opinion that these informal arrangements harm no-one and benefit all involved. Informal agreements were seen as a way of developing woodlands for NTFPs at no cost to the landowner, but with the potential to generate income in the future.

Many of the landowners present in this workshop felt that the size of units that were used to manage forests, particularly by public sector and investment forestry, were too large to be suitable to address the needs of both active management of NTFPs or even to monitor current harvests. It would just not be efficient to investigate the opportunities for NTFPs on this scale whilst also engaged in industrial-scale forest management. Smaller scale forestry, such as crofter forestry or smallholdings, were felt to be more appropriate for effective utilisation. While it is clearly the case that very detailed knowledge of sites is needed to manage for NTFPs, given the small average size of individual woodlands, very few have naturally occurring commercial quantities of a single species.

Without government support, landowners felt that they were unlikely to be able to develop management methods to improve yields. Landowners and managers felt that given previous experience with other forms of development, government policy was also potentially somewhat contradictory. The group questioned SNH's role, with its dual responsibilities as protector of the natural heritage and promoter of the use of the natural heritage. The group used the example of how initiatives encouraging access to the land could subsequently become too successful at bringing people in and potentially cause problems with erosion.

> There is this fantastic sort of contradiction about Tyndrum. I'm sure that some of you will be aware of this, but SNH were very upset about the increased use of the path through that area because it was environmentally sensitive and so on and there were other people saying it wasn't. SNH were saying that is exactly what we don't want, all these people coming through there, but to SAC, the landowner, this was the one source of income so they were keen to encourage more people to come through. (LW3)

Landowners clearly felt that a balance of sustainable utilisation was something that SNH might have difficulty in finding.

NTFP inventory study

Sustainable resource use was the focus of the other study on which this chapter draws. The study aimed to identify the availability of resources in six woodlands around Scotland, developing methods for inventory of NTFP resources and attempting to assess availability of products and habitats in which useful species could be encouraged.

Six community woodland groups were identified from among those who had expressed an interest in being involved in the study. The woodlands were chosen for their variety in size, species make-up and management history and for their geographical spread (See Table 17). According to the size of the woodland, either the entire woodland was surveyed or an area of around 80-100ha was selected in consultation with the local community. Methods used in the inventory are described briefly in Chapter One.[42] Perhaps the most important element of the inventory was to identify local interests and to use these to refine the range of species covered by the survey. The interests of community woodlands vary widely and interests within communities differ, therefore the management objectives of the woodlands survey will be considerably different to those of state owned forests, investment forestry or estate forestry.

Study findings

The most striking finding of the inventory study was that many NTFP species were found in all the woodlands, if at low densities, no matter what the management regime or species make-up was. However, the marketability of the species found was very variable, for instance edible fungi species were found in great abundance in Kirkton wood, but these species, while being commonly eaten in Scandinavia; do not have a significant market in the UK. Established buyers have found that they are able to broaden the range of products their

[42] Since this study, through the author's work with Reforesting Scotland a "front end" to the inventory methodology has been commissioned, a participatory process for working with local communities to prioritise species for the inventory to focus on according to local interests.

customers will buy once they have gained trust, but a community group would have to work hard to persuade new customers to try completely new products. An additional difficulty encountered was that while the presence of NTFP species could be recorded, the availability of the harvested part was often more difficult to judge.

Table 17: Woodlands surveyed

Wood	Size (Ha)	Ownership	Species make up	Management objectives
Townhill	37.1	State	Scots pine, mixed broadleaves and open ground.	High quality recreational and educational resource.
Finlets	228	Private owner/ common rights	Scots pine, occasional rowan, birch and holly.	Conservation and habitat restoration. Revenue generating activity.
Borgie	3,136	State	Sitka spruce, Scots pine, Japanese larch and hybrid larch.	Multiple objective forestry, revenue generation for local community.
Kirkton	92	State	Lodgepole pine, Sitka spruce.	Recreational opportunity and revenue generation for local community.
Minard	170	State/ Management agreement	Mixed broadleaves, Sitka spruce, Norway spruce and hybrid larch.	Recreational opportunity and revenue generation for local community.
Balloch	97	State/ management agreement	Conifer/ broadleaf mix.	Recreational opportunity and revenue generation for local community.

At one particular site, Finlets, blaeberry was found right across the site, but was only fruiting in abundance in more sheltered locations where there were recently planted trees providing cover. In more exposed areas with little regeneration the plants were so stunted by grazing that there appeared to be little fruiting. In the future, however, with control of deer and greater tree cover, this site may be more productive. Inventory of NTFP species therefore needs to take into account the potential for productivity as well as current conditions.

Given the low densities of coverage, large areas of woodland would be needed to obtain marketable quantities without significant changes in management. If these woodlands are considered in the context of the availability of woodland in the local area (across different landowners) it is likely that marketable quantities of products could be obtained. Available statistics on land use tend to focus on the size of individual woodlands rather than woodland area under individual ownerships; therefore it is difficult to comment on the wider applicability of the findings of the inventory study to woodland landholdings in Scotland. However, this does suggest that the current utilisation of NTFPs by independent collectors operating in many locations offers an efficient system in the absence of sufficient interest among landowners to improve yields and make harvests from individual woodlands viable.

In addition to naturally occurring NTFP species all of the woodlands surveyed had areas of wayleave[43] and open ground where light demanding NTFP species could be encouraged. In 2000 BC Hydro carried out a study on the potential for the large areas of way leave that Hydro schemes demand to produce NTFP species. Findings were encouraging, with species such as St John's wort (*Hypericum perforatum*) doing well (UNDP, 2001). In addition to these areas of open ground each, woodland also had areas that would provide suitable habitat for NTFP species. In order to make use of these habitats management changes would be necessary, and in addition there is rarely sufficient knowledge available on the management of NTFP species to be able to reliably introduce species and achieve yields of harvestable quantities of products. In the longer term the possibilities that these habitats offer are worth investigating.

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[43] The term 'wayleave' refers to areas of ground left unplanted, for instance to give safe access alongside overhead cables, as fire breaks and to be used to give access for future timber extraction.

These woodlands have in common a fairly recent change in management objectives, either from total neglect or management for game, or management for bulk timber production. As such all of the woodlands are in a state of flux, where they are unlikely to yet be particularly productive for any of the new objectives. The most static objective in the management of woodlands in general has been the production of bulk timber, but as a peak in timber production approaches and timber prices remain low, this objective becomes less attractive and therefore landowners and managers are more receptive to change. Woodlands could now be planted with wider management objectives in mind, but forestry is a long-term undertaking and changes may take some time to impact on the availability of NTFP resources.

The potential for developing available resources into commercial products is also limited by the interests and skills of the local people. Without the enthusiasm of individuals, available resources will not be used on a commercial scale and the necessary changes in management to obtain commercial quantities will not be made.

SECTION 2: OWNERSHIP AND MANAGEMENT IMPACTS ON ACCESS AND AVAILABILITY

Those who own and manage land do not automatically possess the ability to access non-timber resources. As I have already discussed, landowners are often in a position of lacking the knowledge to exploit resources. The management objectives that are encouraged through subsidy and regulation may also lead to woodlands where resources are simply not available. This section details the structures, processes and mechanisms of access relating to the use of NTFPs by landowners and managers, again using Ribot and Peluso's theory of access as a structure for discussion.

Rights based access

As discussed in earlier chapters, the ownership of land gives rights to everything in and on the land, with some exceptions. Given that this right grants landowners ownership of NTFPs on their land, they are also entitled to any financial benefits accruing from those products. The Land Reform (Scotland) Act

2003 reinforces this position, making it a criminal offence to harvest for commercial purposes. Rights for non-commercial harvesting are, however, much less well defined. Civil law defines everything in or on the land as the property of the landowner, but criminal law is not so clear. The Wildlife and Countryside Act 1981 (and amendments in the Nature Conservation (Scotland) Act) allows for harvesting of plant material without the permission of the landowner as long as the plant is not uprooted or destroyed in the process, while the Land Reform Act makes no specific provision for non-commercial harvesting.

The reform of the land tenure system in Scotland has also reinforced this position of the landowner, with outright ownership of the land again the main principle and an end to conditions (or feus) imposed on future landowners. In practice however this legislation is unlikely to have any impact on the harvesting of NTFPs by landowners and managers. The Abolition of Feudal Tenure (Scotland) Act 2000 came in to force in November 2004 and it remains to be seen as to whether it will influence the pattern of land ownership in Scotland to any significant extent, and hence the willingness of landowners and managers to use and manage NTFPs.

Landowners are also affected by legislation guarding the safety of members of the public when they are accessing land and the duty of care that landowners owe towards them. Legislation setting out duty of care begins with the Occupiers Liability (Scotland) Act and the Health and Safety at Work Act, 1974. These two acts set out the responsibilities of landowners (and in some cases also tenants) to exercise reasonable care for the safety of those on their land. Visitors, for whatever purpose, are also expected to take responsibility for their own actions and to use their own judgement as to what constitutes safe actions. Unlike in England, there is no distinction made in the level of responsibility to those who are invited and those who are not there legitimately. The Land Reform (Scotland) Act maintains this position and does not affect the extent of the duty of care. In practical terms, landowners have a duty of care towards all those accessing their land.

Byelaws and restrictions

Public landowners and bodies frequently make restrictions on the management and use of land. Most directly the Forestry Commission's Byelaws prevent the harvesting of goods from any Forestry Commission land. For example, the Forestry Commission's Byelaws state that:

> 5. No person shall in or on the lands of the commissioners:-
>
> Vii. Dig up, remove, cut or injure any tree, shrub or plant, whether living or not, or remove the seeds there from, or dig up or remove soil, turf, leafmold, moss, peat, gravel, slag, sands or minerals of any kind. (Forestry Commission, 1982)

Similar restrictions also apply to animals. This is a thorough and complete restriction on the removal of anything from Forestry Commission Land, effectively forbidding harvesting in around of half of Scotland's woodlands.

More indirectly the imposition of designations such as sites of special scientific interest by Scottish Natural Heritage can also restrict management activities. The impact of any restrictions is obviously specific to each site, and so can not really be discussed in general terms.

Implementation

Thorough legal restrictions therefore apply to commercial harvesting and in the case of Forestry Commission land, all harvesting. However, as the previous chapter discussed, making the distinction between commercial and non-commercial activity is much more difficult than might be suspected, and so what appears at first glance to be a straightforward legal position, is in practice more complex and less favourable to the landowner.

In practice landowners may be unaware of their legal rights, or unwilling to impose them, either because it is low on their list of priorities:

> We have a hard enough time keeping poachers and everything else off the land without people coming in and picking a few mushrooms. (LW3)

or because it would practically be difficult to do anything about:

> There are probably very few of our woodlands where there isn't some form of collection of some form of harvest, but it almost all operates on the grey market, it is almost as if to have any form of meaningful dialogue, or any form of meaningful benefit back from that, so long as we know it is not positively damaging to the woodlands it is very difficult to do anything other than accept. (LW3)

In the case of the Forestry Commission, there has been a position of tacit acceptance both of non-commercial and commercial harvesting, with the only case that has come close to prosecution occurring when harvesters damaged habitat through poor harvesting practice.[44] The landowner's position is therefore relatively weak without the resources to implement the law, despite having legal backing.

Additionally, the Forestry Commission's remit to manage for the public good and the activities that it carries out in support of this can place the organisation in direct contravention its own byelaw. The Forestry Commission actively encourages the harvesting and appreciation of NTFPs by holding events such as fungal forays. As a result, the byelaws are not only not implemented but not adhered to in any way.

Customary rights

Landowners are generally aware that there is a strong conviction of customary rights to non-commercial harvesting for those products that could not be deemed a crop, those that the landowner does not themselves manage or harvest for profit. Landowners are also generally accepting of commercial harvesting. For the most part the incomes that harvesters make from their woods are deemed insignificant by the landowner. There may be an element of playing the 'benevolent Laird' who can afford to let these resources be used by others. Of course it is also likely that landowners may recognise that in allowing commercial harvesting to take place they may gain some leverage in the give and take of community relations and be able to gain goodwill that will translate to benefit in another form.

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[44] There is an ongoing case in England, where a commercial harvester is being prosecuted by Defra (after harvesting on Forestry Commission land in the New Forest) under the Theft Act (1968). This Act, which only does not apply in Scotland, makes harvesting for commercial purposes without the permission of the landowner illegal.

Landowners do tend to view people who travel in to harvest in a different light from local harvesters. Several landowners have told stories of apprehending van loads of Italians or Eastern Europeans harvesting mushrooms. In part the objection is to harvesting en masse, in part to the loss of the resource for local people and in part to a feeling of being taken advantage of by people who don't know the local rules and are unlikely to return the favour in any way.[45] There is also a fear that undocumented workers are becoming involved in harvesting and will bring with them new harvesting practices which may upset the balance of harvesting that currently exists. These objections also have undercurrents of annoyance that as a result of their knowledge, there are clearly people who can gain access to resources from the woodland that the landowner themselves does not know about.

While customary rights to the use of NTFPs are commonly recognised by landowners (at least in the limited sense of use for non-commercial purposes by mainly local people), these are truncated customary rights. Giddens makes a theoretical separation in resources between the allocative (material) and authoritative (power) (Giddens, 1984), though it makes sense to think of every resource as having elements of both. In practice, in terms of access to resources this means that there are rights to the use of resources (allocative or usufruct rights) and to the resources themselves (authoritative). A key element of this second group of rights is missing from NTFPs in Scotland, because harvesters have no power to influence the management of products.

Structural and relational mechanisms of access

In some respects many of the processes and mechanisms of access are irrelevant when applied to current levels of NTFP use by landowners. Landowners are clearly in a potentially very favourable position to physically access resources on the ground and often have the facilities that would enable them to process the resources more easily. However, without the initiative to use the resources in the first place, landowners have no necessity to exploit the processes and mechanisms of access that are available to them.

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[45] Although outside harvesters are unlikely to spend significant amounts of money in the local area they will inevitably use some local services and contribute in some way to the local economy.

Technology and equipment

Landowners are in a position to use vehicles and machinery that is normally used for other estate purposes and perhaps also to adapt equipment intended for other purposes for processing NTFPs. Estate buildings are also available to be converted for processing without the cost of rent or purchase: for instance, sheds used for drying timber could also be used for drying herbs or fungi.

However, landowners are rarely interested in exploiting resources themselves (with the exception of some processors such as Highland Wineries). Those that do exploit the resources are distinguished from most NTFP harvesters by the relatively large scale of their operations, generally requiring access to processing technologies. Perhaps it is due to the fact that many of the current uses for NTFPs are small scale and that NTFP use does not fit with the scale of activities that estates normally operate on, that landowners are not interested in becoming involved.

Access to capital

Landowners are also in a good position to access capital: firstly, they may have other profitable activities that they are able to offset against the cost of new enterprises; secondly, having assets they are able to access borrowing; and thirdly, they are likely to have existing relationships with lenders. However, as the introduction to this section stated, landowners are wary of new ventures. Land is an asset, and perhaps owning land encourages landowners to be reliant on maintaining the value of their assets rather than speculating on new ventures.[46]

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[46] It is very questionable whether estate management practices focussing on large volume, low quality timber production along with game and to some extent tourism are maintaining the value of assets. During the debate surrounding the Land Reform Act a point of contention on the part of both communities and land owners was the price to be paid by communities and whether this should be the open market price or an economic price set by a government appointed valuer (Royal Institute of Chartered Surveyors 1999; Wightman 1999). Landowners felt that the economic value was likely to be lower than the open market value. The White Paper on land reform argued that local land ownership monopolies resulted in inflated land prices as there was no immediate competition (Royal Institute of Chartered Surveyors, 1999; Scottish Parliament Information Centre, 1999; Wightman, 1999). This inflation of Highland land values also reflects the prestige of highland land and the preparedness of landowners to subsidise the running of their estates. This prestige means that others are prepared to pay inflated prices for land that will continue to loose money if managed in the same way.

Access to markets

As section one outlined, landowners rarely have direct contact with markets (and as access to markets is closely linked to access to knowledge and access through the negotiation of other social relations, these issues will largely be dealt with under the appropriate subheadings). In those cases where landowners are accessing markets directly these tend to be fairly upscale markets, perhaps available to the landowner through tourism activities.

For example, in the case of Highland Wineries[47] the business was built up as much on visitors to the premises on the Moniack Estate who pay for tours and purchase goods onsite as on goods marketed through retailers. Much is made of the history of the Fraser family, the way that these goods are marketed on site is as much about the land owning family as the product itself. The setting of the production facility at Moniack Castle helps to add to this image (the ability to offer this sort of 'experience' to the visitor in addition to the product, is a distinct advantage). Landowners also have the advantage of being within a heritage that is a part of the existing tartan and bagpipes romanticised version of Scottish history that is sold to tourists. The resources available on the land, the setting of the family seat and the family history are assets that are available for many landowners to exploit.

Physical and topographic factors

Unlike harvesters, landowners may have to limit the scope of their operations to their own land. While harvesters are able to range widely to find the right sort of conditions for the products they seek, landowners have to first contend with the conditions that they find on their own land. While many of the conditions affecting NTFPs are a product of management (the tree species, the variation in age and species structure, planting density and management intensity),[48] physical and topographical factors are also important (including, soils, aspect, slope angle and drainage). Without specific management for NTFPs these factors will have the most impact on the availability of different NTFPs from the

[47] Highland Wineries has developed its market to the extent that it no longer seeks publicity opportunities, selling in major department stores. The company must now feel that it has reached a level of production and profitability that it does not wish to expand upon (Cannon, 2005).

[48] Albeit long term management, which current landowners may only be able to change over time.

woodland types that are present. The link, therefore, between the size of the landowner's holdings and the availability of NTFPs is not direct. NTFPs of some sort occur without intervention in most woodlands, but whether these are the products that the landowner wishes to exploit or are economic to exploit, is another matter.

Landowners in the Lanark workshop on woodland management (LW3) referred to honeypot sites, situated in easily accessible areas, perhaps at a road junction, with attractive scenery and on existing routes used by tourists. These sites have great potential to attract visitors to amenities, but very few landowners are lucky enough to own land with these characteristics (LW3). In the same way, not every landowner has land with geographical and topographical advantages that make NTFP use an obvious proposition.

The geographical and topographic factors relating to a site also affect how accessible it is to others and whether as a result there is likely to be competition from other harvesters. An easily accessible site where access is encouraged may provide an opportunity to benefit indirectly from NTFPs, people are attracted to the site to harvest, which is freely accessible, but will then spend money on other facilities in the local area. The size of the site will also impact on the availability of resources to the landowner. A small landholding may be thoroughly harvested by others, leaving little for the landowner (though conversely it may also be easier to police). Larger sites may have more area that is inaccessible to the general public, either requiring a long walk in or extensive scouting to find productive areas. A landowner may be able to reach outlying areas with a vehicle by way of tracks beyond locked gates.

More remote sites might have greater potential for exclusive harvesting arrangements as there would be less risk of competition. These sites, however, would obviously have the disadvantage of being less accessible to the harvesters who would therefore incur increased costs both in terms of time and possibly also in terms of specialist vehicles; in addition these sites are likely to be distant from markets.

As the inventory study discussed earlier suggests, individual woodlands rarely have the capacity to support commercial scale activities: even with active management the majority of woodlands are too small to provide sufficient resources. In the case of landowners, however, we should consider not the size of individual woodlands, but the size of woodland holdings within an ownership. As I have discussed earlier, statistics to enable this analysis are not available.

Access to knowledge

The key issue for landowners is awareness of the existence of markets and routes to market. Without this knowledge, landowners are powerless to take advantage of opportunities for marketing goods present on their land. Landowners wishing to take advantage of NTFP resources are left with several options: to wait until those with knowledge come to them with opportunities; to seek out those with knowledge to exploit the resource on their behalf; or to gain knowledge themselves. The level of knowledge necessary to successfully commercialise products increases with each approach.

Landowners wishing to develop NTFPs can either market quantities of raw materials to wholesalers, or add value to goods through processing and market them to retailers. In the first case the goods can be harvested by agents, or by independent harvesters. In each case the expertise is held by others. The landowner need only have sufficient knowledge to ensure that they are receiving an adequate return for the goods. Any additional knowledge would however obviously be an advantage, particularly if yields could be increased.

In the case of both raw material production (with active management) and processed goods, utilising NTFPs would involve a fairly fundamental change of mindset from providers of recreational land and producers of large scale unprocessed product (timber), to more micro-managed, processed goods. This kind of change involves a considerable commitment and landowners feel the need to be sure of some success before taking on this kind of risk. Given the small number of landowners who have become involved in NTFP enterprises, in this respect landowners appear to be more willing to settle for the predictable returns of the activities they are currently engaged in than risk new ventures and have tended to change the functions of their management in accordance with

available grants and subsidy, thus ensuring at least some guaranteed income. Landowners are keen to see that there should also be similar subsidies for the development of NTFPs before they will take on the risk: 'There is no grant structure to make a reality of this' (LW3). This aversion has everything to do with knowledge, landowners need to be assured that their investment in NTFP enterprises is likely to produce a steady income, or else have the chance of high returns.

However, the risk in becoming involved in NTFPs need not be that great for a landowner. There will be sufficient quantities of products to manufacture processed goods on most land holdings. The makers of fruit wines etc. are able to gather sufficient quantities of raw material without significant changes in management practice, therefore investment is only required for processing, not production. There is also far greater availability of knowledge on processing than on improving production, so accessing this knowledge need be no more difficult than buying in any other expertise that a landowner might access.

Having said that processed NTFPs might present a more accessible opportunity to landowners than increased NTFP production, the management of woodlands for NTFPs would probably be a long-term goal regardless of the original nature of the enterprise. The chapter on harvesters developed the idea of two forms of knowledge in which ecological awareness is held, traditional knowledge and new expert knowledge.

Traditional knowledge

The degree to which landowners are able to access traditional knowledge varies considerably. Those who have lived in the same area for several generations may well have built up the same sort of traditions of seasonal use as are present outside the land owning community. Incoming landowners, particularly those from overseas, may well bring with them other traditions of use which they could utilise for their own purposes or for commerce.

New expert knowledge

The type of new expert knowledge referred to the Chapter Two has mainly been developed as a result of harvesters wishing to improve harvesting practice and to prevent damage to harvests rather than to improve yields. To some extent

landowners have also been contributing to the development of this knowledge. The Woodland Trust has developed harvesting agreements with various harvesters in order to develop harvesting standards. In one case the agreement was set up at the instigation of harvesters in order to reduce harvesting pressure on a particular area, so the aim was to set approximate rather than absolute limits.

Other landowners have attempted to improve yields and encourage species to establish in new habitats. These limited researches have tended to be rather piecemeal and in collaboration with harvesters, in effect drawing on the knowledge that harvesters have in order to test theories.

The Land Reform Act uses whether or not resources are managed as a means of distinguishing between those that require protection and those that do not. Changes to the Bill as proposed to the parliament inadvertently resulted in the possibility that woodlands could be excluded from public access rights on the basis that trees are managed crop. A recent amendment (Scottish Executive, 2004) was passed distinguishing between tree nurseries, where there are young trees more vulnerable to damage and woodlands in general. As the Act stands, landowners might be able to exclude access from woodlands on the basis that the trees were a crop. NTFPs could then be presented as a crop rather than naturally occurring phenomena without value, and in doing so to claim a degree of ownership and control of resources that is more likely to be recognised by harvesters.

Professionalised knowledge

I would also add a third type of knowledge to these two existing bases, professionalised knowledge. Landowners taking part in the three Lanark workshops would clearly like information presented in the way that they are used to receiving it – presented as certainty and with scientific backup. Without this sort of 'reliable' information landowners are reluctant to proceed:

> I think as well it needs to be more than a look on the internet or a handbook there need to be a whole set of experts that you can draw on to do an impact assessment, about bringing new things into forests, because we have touched on a lot of potential hazards as well as advantages. The person who is involved may not know what there is, and

there might be something that it would be much better for them to use. So it would be useful to get someone in, maybe a consultant to do an assessment.

(LW1)

Professionalised knowledge may have its basis in either traditional ecological knowledge or new expert knowledge, but in order to reach landowners it needs to be presented in a way that is acceptable to them. The quotation above illustrates that landowners are familiar with receiving information from consultants and see this sort of information as trustworthy or at least stemming from a reputable, and therefore accountable, source. Again, this leads to the conclusion that landowners as a group are extremely risk averse, only wishing to make changes to management and business practices if there is a cushion of subsidy and accountable external advice.

Larger private landowners and corporate landowners tend to rely on forest management companies to manage their estates, and so they have an existing source of external advice. Forest management companies would provide the most efficient route for these landowners to receive advice through, but at present they are unable to provide this kind service as they do not have the necessary expertise and because it does not fit with the size of management units that are used for the other management objectives that they serve.

Access to authority and decision making power

Landowners are well organised as a group, with established representative bodies, good knowledge of the processes of decision making and the time and resources available to access decision making. The ability to access decision making processes and acting on that ability are inter-related: the knowledge that decisions *can* be influenced in a favourable way leads to the conclusion that it is worthwhile to commit time to influencing decision making. Landowners have made this connection. In addition to access to official channels, landowners are also undoubtedly able to use their representative group and individual contacts to access processes indirectly. In the case of the public landowners, such as the Forestry Commission, access to decision making power is even more direct.

The structures and processes for influencing forest policy have changed markedly in the past decade with the establishment of the Scottish Parliament and the Scottish Executive. More recently the devolution of the Forestry Commission means that the Forest Estate is now managed by Forest Enterprise Scotland under the direct control of the Scottish Parliament. Consequently, it is unsurprising then that the landowners' representative body has also undergone changes in form and structure.

The Scottish Rural Property and Business Association (formerly the Scottish Landowners Federation) lists as the main benefits of membership the opportunity to influence policy. The re-branding of the SLF in March 2004 opened membership up to a wider range of interests than had previously been the case, although it is unclear whether this re-branding was prompted by the interests of existing members or the desire to attract new members. In response to consultations the SRPBA represents the position of the private landowner providing public benefit – whether this be recreational resources, environmental benefits or economic opportunities. The SRPBA sees public benefit as providing justification for subsidy and seeks recognition for the role that their members play in delivering government policy. Government policy and the public good, however, is only willingly embraced when it is provided for by existing management or when there is subsidy to support it. While the national forest estate exists to provide for the public good, private woodland owners' primary interests are their own and public interests are catered for if they do not conflict.

Access through social identity

Social identity in this context may in some respects work against landowners and managers. Landowners see themselves as the proprietors of businesses and producers of commodities on a large scale. Without knowledge of the value of wild harvested products, these are assumed to be labour intensive and therefore low profit.[49] It would be a venture outside the social identity of a landowner to harvest these products for sale. Harvesting these products for domestic use is another matter, however, and products such as wild

[49] This impression is accurate if small volumes of unprocessed products are harvested to be sold on to wholesalers, it is however, possible to add considerable value NTFPs through processing and develop profitable enterprises.

mushrooms and berry preserves are seen as being an important part of a regionally distinctive cuisine and decorative products are harvested as a traditional seasonal activity. The distinction between harvesting as a domestic activity (carried out primarily by women) and harvesting as a commercial activity (carried out by men) is that the former contributes to more obviously to lifestyle and the latter more obviously to livelihood.

The distinction between lifestyle and livelihood is not completely clear, and the end result may be the same. Contributing economically to the household economy enables lifestyle improvements that may also be obtained directly by labour: you could either spend time growing your own organic vegetables, or you could spend time earning money to buy organic vegetables. The relative efficiency of these two strategies is only one factor in the decision. Growing the vegetables yourself may contribute more to lifestyle in other ways – it may provide relaxation, exercise, time spent outside and a sense of achievement in providing for your needs and desires. Earning the money to buy the vegetables may also contribute to lifestyle – perhaps through the status accorded through your employment. The relative value of these two strategies varies according to the individual, but also according to the way in which they are viewed by different elements of society.

Access through the negotiation of other social processes

Landowners have contacts with contractors who undertake other types of estate work and who themselves may be familiar with market opportunities for NTFPs. Contractors are most likely to be aware of products that can be harvested in conjunction with timber, such as boughs for the Christmas market, or as a part of conservation related activities, such as the harvesting of rhododendron. Contractors often take the initiative in these dealings is often taken by the, landowners tend not to have sufficient knowledge to exploit opportunities directly. Without the knowledge to exploit the opportunities themselves, they are also at a disadvantage in their dealings with others.

Structural reflection

Perhaps the main difficulty in applying Ribot and Peluso's theory to landowners is that the group is not homogenous. Large and small landowners vary greatly in levels of knowledge and attitudes, and therefore the extremes of the group may represent contradictory positions. This is particularly true in terms of access to knowledge. The scale on which large and small landholdings are managed varies greatly and therefore small landowners who know their woodlands in greater detail (and are more likely to be interested in obtaining livelihood benefit from small scale undertakings) are therefore more likely to be able to benefit from this knowledge.

As with previous chapters there are also areas where the group overlaps with others – landowners can also be processors and harvesters; and in the case of the Forestry Commission also policy makers. With this group especially there are also occasional overlaps between headings of analysis. The underpinning factor in the use of NTFPs by landowners is access to knowledge and therefore this impacts on other factors, not least, influencing the ability of landowners and managers to negotiate effectively with other groups.

It is also worth pointing out a factor that is not fully developed by this structure of analysis which is the importance of temporal factors in influencing landowners' management decisions. Forestry requires very long term planning cycles by today's standards, predicting timber markets in 30 to 100 years time. Even management decisions made for more short-term gain from NTFP income would also affect earnings from timber in the long term. There needs to be a balance in the ability to generate income during the rotation and also maximise yield a the end of the rotation. Current low timber prices have had a particularly bad effect on the industry because in recent years forestry has been totally reliant on getting a good return at the end of the rotation from the sale of the timber crop. In addition, the increase in timber available for harvest over the next twenty years can only serve to exacerbate the crisis in the industry as this will push prices down further. A well managed forest estate should have near continuous income from timber sales and a near continuous planting programme to maintain that income. It should therefore be a priority to those wishing to maintain a stream of income to diversify age structure within forest

holdings. Diversifying the age structure of forest holdings would also have the advantage of being possible to introduce management changes gradually across the estate to benefit the production of NTFPs and to bring in income throughout the rotation.

This lack of focus on temporal factors in explaining environmental change has been levelled at political ecology generally by (Vayda and Walters, 1999), arguing that political ecology neglects the interplay of politics and ecology. Instead, Vayda and Walters propose an evenemental approach, analysing environmental events and their impacts. In this case, where the focus is not on explaining environmental change, but on analysing access to and availability of resources, a combination of these two approaches is needed.

Summary and key points

Merely owning the land does not give sufficient control over the resource to be able to command a high percentage of the return. Such lack of control, and lack of knowledge that causes it, can result in a sense of unease. Perhaps the position that landowners now find themselves in, with a very weak timber market adds to their feeling of vulnerability (LW2). This position is also a fairly novel one for landowners to find themselves in after centuries of feudal control. The Land Reform (Scotland) Act 2003, gives greater control to landowners over the harvesting of wild products but has also taken away many of the feudal rights that had been held. Altogether, landowners find themselves in a historically weak position. In this context, legal rights become worthless without the knowledge to make use of those rights.

Large landowners (private individuals, corporate and public owners) themselves recognise that the scale on which their woodlands are managed does not lend itself to the encouragement of NTFP production, and therefore NTFPs occur by chance. Without the conscious management interventions that make a crop, rather than an incidental presence, harvesters and buyers tend not to recognise landowners as having a legitimate claim over the resource. Without the knowledge to demonstrate how management interventions affect NTFP productivity, landowners are powerless to claim ownership of NTFPs in the

same way that timber is claimed. In this sense, through their inability to use and manage NTFPs landowners too lack both allocative and authoritative rights.

Perhaps the most striking difference between this group and those discussed in previous chapters exists in attitudes to information and the way that it is gained. Landowners and managers are accustomed to seeking advice from professionals. While there are harvesters and buyers who could be considered expert, having combined information available from books with traditional ecological knowledge and have developed new expert knowledge, they have used this information themselves. This knowledge is therefore not available to landowners in a form that they would necessarily recognise as professional advice.

In the case of landowners and managers, unlike groups discussed in previous chapters, there is a distinction to be made between commercial and non-commercial harvesting without some of the blurring of boundaries that is to be found with buyers and processors and harvesters. Harvesting is something that contributes to lifestyle, but not to economic livelihood. Goods may still be substituted for things that might otherwise be purchased, and there is a definite pride in obtaining goods for household consumption from one's own land, but crucially attitudes to these goods vary and the economic contribution of goods harvested as a leisure pursuit is not recognised.

Given a willingness to stray outside the traditional estate activities of game management, there are opportunities for owners of large landholdings to become involved in the management, harvesting and processing of NTFPs themselves. However, landowners are likely to only achieve a viable return if a full commitment is made to manage for NTFPs and to engage in processing activity themselves. Without improving yields and adding value to products it is unlikely that landowners can compete with unregulated independent harvesters.

There is also the question of moral and customary rights to the use of products. Given the importance of knowledge of products and markets in utilising NTFPs, the current pattern of commercial use is relatively efficient. Individual harvesters are able to make a contribution to their living through harvesting on land

belonging to others by harvesting over large areas and multiple land ownerships. Both private and public landowners recognise by their lack of action on their legal rights that harvesters make little economic or environmental impact on each landowner management needs to be weighed against the livelihoods that are supported by the current system of unregulated harvesting.

CHAPTER 5: GOVERNMENT AND SUPPORT ORGANISATIONS

This chapter explores the position and perspectives of government and support organisations, the final stakeholder group examined in this thesis. First, Section One describes the policy objectives for the involvement of government and non-government organisations with NTFPs in Scotland. It explores and describes the measures aimed at achieving these objectives, whether in terms of aiding commercial development or recording and documenting current NTFP use, assessing the impact that commercial development projects have had on use, or legislating for the regulation and control of harvests. Later in the chapter, Section Two analyses the ability of organisations to influence NTFP management and harvests, using Ribot and Peluso's theory of access to explore policy making, implementation and promotional initiatives. The chapter concludes by suggesting how best to address the management needs of sustainable harvesting that are not currently being met.

SECTION 1: THE INVOLVEMENT OF ORGANISATIONS WITH NTFPs.

Policy objectives

The main visible impetus for the development of NTFPs over the past decade has come from institutions. For many years harvesters have been working away to develop commercial and domestic activity on a small scale and on their own terms. However, it is government organisations and support NGOs that have begun to actively promote NTFPs as an additional use of forests. The use of NTFPs to attempt to bring about development objectives overseas (conservation of habitats and, more recently, poverty eradication) has brought the potential of this area to the attention of government and non-government organisations hoping for similar results within Scotland. Overseas development of NTFPs hopes to provide 'an alluring mix of ecological, economic and social justifications for preserving rainforest lands in a relatively pristine condition' (Salafsky et al., 1993 p 40). Similarly, in Scotland, it is hoped that NTFPs can be extracted from woodlands whilst maintaining the biological diversity of semi-natural woodlands and potentially make producing quality timber in commercial

plantations more commercially viable. In each instance, as Salafsky et al. suggest, it is the combination of economic and social benefits as well as ecological sustainability that makes NTFPs so attractive for local development.

Today, many of the policy documents relating to forestry have at their core these three things: the maintenance of the economic viability of rural populations, the development of social stability and quality of life and environmental sustainability. Policy documents call for call for forests to be managed in ways that enjoy broad public support as the often deal with resources that are publicly held or subsidised. The way in which this is gauged has moved in the past decade, from a position of representative democracy (where the Forestry Commission manages forest resources in a way which fits with the policy of the elected government), to one of increased consultation and of strictly defined devolved local control of some publicly held forest resources. A detailed analysis of the policy setting out these economic, social and environmental motivations for the involvement of Scottish government agencies and NGOs in NTFP development and its implications follows.

Economic Benefits

The UK is signatory to international and European level guidelines and documents which set out the economic role of NTFPs in the context of sustainable forestry. The EU set out its own guidelines on sustainable forest management in 1993 (The Helsinki Guidelines). These guidelines contain one point mentioning NTFPs:

> 11. Because of the expanding European forest resource, the use of non-wood forest products should be encouraged on a basis compatible with the sustainable management of forests, thereby providing and increasing the potential for traditional and new forest products, sales of which can provide, for both the owner and society, a ready means of financing forest management. (Forestry Commission, 2004a p 50)

This is interesting in that it suggests an approach where non-market benefits are the purpose of forest management and are enabled through production and sales. This approach is attractive in practical terms too: the initial cost of planting trees can then be offset over a shorter period of time, as can management activities such as thinning and pruning. Rather than providing a continuous flow of income, returns from forestry tend to have peaks and troughs

with timber sales at the end of the rotation providing the majority of income.[50] By focussing attention on a wider variety of products, including NTFPs, it may be possible to generate income earlier in the rotation, and potentially to gain a continuous flow of income throughout the rotation of timber growing.

In a slightly less overt way, the Pan European Criteria for Sustainable Forest management (PEC) also stress NTFPs as a productive role for woodlands through:

> Maintenance and encouragement of productive functions of forests (wood and non wood) (Forestry Commission, 2004a p 9)

At a UK level these two documents are used as the basis for mechanisms of management such as the UK Forestry Standard. While quoting the two documents liberally, and endeavouring to show linkages, the standard does not explicitly mention NTFPs, only sometimes vaguely referring to 'other forest products' without stating what these might be.

When it comes to the Scottish level, NTFPs become more visible again. The first objective of Scotland's own forestry strategy, the five year strategic plan for the Forestry Commission, is to contribute to the Scottish economy. Here the strategy sets out to:

> Create a diverse forest resource of high quality that will contribute to the economic needs of Scotland throughout the 21st century and beyond. (Forestry Commission, 2000 p4)

As a priority for action, the strategy lists the exploitation of non timber outputs, but does not exude confidence, stating that:

> As with all niche markets today, there is the possibility that they may become mainstream markets in the future (or fade into oblivion). It is important that promising developments are encouraged. (Forestry Commission, 2000 p 25)

In a recent review of the Scottish Forestry Strategy, respondents indicated that NTFPs should play an important role in sustainable rural development. The consultation also asked about forestry incentives, and received responses

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[50] Together with grant support for planting and early management through the SFGS (Scottish Forestry Grant Scheme), though this support is currently under review.

mentioning the need for grant support for NTFP production (Forestry Commission, 2005). At present, however, the Scottish Forestry Grant Scheme contains no provision for commercial production of NTFPs.

The motivations behind these policies are primarily founded in the need to diversify from the industrial scale pulpwood production that has led forestry into its current fragile economic state.[51] Reasons for supporting NTFPs in particular include the real and growing market opportunities and the opportunity for flexible employment opportunities.

Market opportunities for NTFP goods exist and are growing, particularly in the case of edibles and medicinal goods. Market research records that the UK market for natural alternative remedies (mainly plant based products) was worth £210 million in 2004, and rising at a rate of approximately five percent per year for the last five years (Gower 2005). In fact, this market is growing at such a rate that WWF have raised concern that a fifth of the world's plant species are in danger of extinction due to harvesting for growing medicinals markets (WWF, 2004). Recent press articles also attest to similar growth for other natural products (Brown, 2003; Clark, 2002; Gourley, 2004; Gower, 2005). Gower also comments on the factors that are pushing the rise in the use of alternative medicines, citing stress, changing eating habits due to time constraints, increasing media coverage of health issues and increasing acceptance of self treatment. These factors, coupled with environmental concerns that are driving demand for locally produced food, create favourable markets for small-scale NTFP use.

As described in Chapter Three, jobs in commercial exploitation of NTFPs fit well with employment patterns of pluriactivity in rural communities. The scale of NTFP enterprises tends to be small and work may be seasonal or part time.

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[51] It is difficult to make economic comparisons between 'conventional' forestry, and forestry with NTFP exploitation (both commercial and otherwise), with or without considering non-market benefits. Without extensive and long-term (over the course of a whole rotation) research, an economic comparison would be impossible as data for the yields of NTFPs are not available. Two factors make economic comparisons particularly problematic as NTFPs and conventional timber harvests operate at different scales. Firstly, harvesting of NTFPs is likely to take place at several locations over several different land ownerships. Secondly, harvesting takes place at different temporal scales, with the harvesting of specific products moving location as different areas of forest enter or leave productive phases. Neither of these factors is a barrier to valuation as such, but they illustrate a choice that would need to be made as to whether the special and temporal characteristics of timber or NTFP harvests were to be used as the norm against which to make a comparison.

This is also the case with other activities that rural people may be engaged in. Several part time jobs can contribute to a livelihood that is more flexible and robust than one single full time job, which can leave individuals and communities vulnerable to outside forces and sudden closures. In contrast, if one activity among several fails a whole income is not lost.

Social benefits

Current EU rural development policy has four main axes: improving the competitiveness of farming and forestry, improving the environment and countryside, improving quality of life and diversification of the rural economy. These first and last of these two objectives are aimed at maintaining rural populations, the second at ensuring sustainable use (European Union Environment and Rural Development Programme, 2005).

Maintaining rural populations is a feature of policy at European, UK and national levels. SNH's 'Forests and Woodlands' document sets out policy objectives over a 25 year period, reflect SNH's dual role in protecting and promoting the use of the environment as:

> highly valued assets which have often been shaped by human activity. Under sensitive management the natural heritage also has the potential to enhance peoples lives and provide substantial economic benefits, of particular value to fragile rural populations.(Scottish Natural Heritage, 2002 p 1)

The commercial development of NTFPs has an obvious role to play in support of these rural development policies. In addition, the harvesting of NTFPs has positive benefits for quality of life whether for personal use or for commercial purposes. NTFPs are already widely used, recent surveys have shown that approximately 25% of Scotland's population have harvested NTFPs in the last five years (Snowley and Daly, 2005; TNS Global, 2003). On some level therefore, almost a quarter of Scotland's population have knowledge of NTFPs, and this is in an important part of how people interact with woodlands. NTFPs have the potential to bring small-scale local economic development or significant quality of life enhancements to a large group of people, thereby helping to sustain rural communities.

Environmental perspectives on forestry and health are present at EU, UK and Scottish levels. Health and wellbeing is an area of current policy concentration, with government initiatives attempting to improve diet and rates of exercise. NTFP harvesting, both through the exercise of gathering itself and through the health benefits of wild foods, benefits general health and wellbeing, fitting well with current policy priorities.

Increasing levels of physical activity is one of the main drivers for policy initiatives to encourage people to engage with the natural environment. A recent review paper commissioned by SNH suggested that physical inactivity was to a greater extent responsible for coronary heart disease and some cancers than smoking, alcohol consumption or poor diet (Carney, 2001). SNH's review paper puts the social benefits as of outdoor recreation:

- Escaping from the pressures of modern living – gaining relaxation, refreshment and challenge, and thus helping reduce anxiety and stress levels.
- Better opportunities for social interaction – meeting people or going out in small groups, and thus helping to enhance communities.
- A more socially inclusive society – walking and cycling are inexpensive activities and better access opportunities close to towns and cities mean that people without a car can visit and enjoy the countryside more. (McKay, Undated)

This notion of the benefits of gathering activity is further supported by the current interest in promoting the engagement of people with the natural environment. NTFP harvesting encourages people to visit forests with a particular purpose that requires close attention to be paid to the nature of the habitat, the changing weather and seasons and forest management activities. As such, NTFP harvesting encourages interaction with and understanding of the natural world amid a growing body of evidence for the health and social benefits of environmental interaction. As well as a will to increase the commercial exploitation of NTFPs, there is also a growing realisation amongst a range of organisations of the extent to which NTFPs are used domestically and the level of importance that they have in peoples' everyday lives. As a result there is also a desire to ensure that increased commercial activity does not impact negatively

on domestic use and to ensure the social benefits of NTFP use are recognised in the management of publicly owned or subsidised land.[52]

Ecological sustainability

NTFP harvesting can potentially take place without significant impact on the habitat. Many commonly harvested NTFPs are fruiting bodies (fungi and berries for instance) or vegetation (floral greens and herbs) and so with good practice, can be harvested with minimal impact on the individual species. This is in contrast to the harvest of timber, when the whole plant is destroyed or indeed, in many cases, the whole habitat. The most immediate concern of most government bodies concerned with NTFPs (the Forestry Commission, Scottish Natural Heritage and the Scottish Executive) is to ensure that harvesting is undertaken in a sustainable manner. This concern is shared by conservation organisations (particularly given that some of these are landowners), interested in sustainability from an eco-centric point of view and also to prevent damage to state or private assets (LW3).

This concentration on sustainable harvesting is traceable to international conventions, in particular the Global Strategy for Plant Conservation, to which Britain is a signatory. This has two relevant targets and allied indicators of progress:

> Target 11. No species of wild flora endangered by international trade.
> Target 12. 30% of plant based products derived from sources that are sustainably managed (by 2010). (UNEP, 2002)

The strategy suggests that indicators of progress might include 'products meeting verified standards or standards that codify good practice' (UNEP, 2002).The strategy further states that sustainable management must be 'understood to integrate social and environmental considerations such as fair and equitable sharing of benefits and participation of indigenous and local communities' (UNEP, 2002). The concept of sustainable use also emerges at national level. Among the objectives included in SNH's policy on woodlands and

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[52] Roughly 50 % of Scottish forested land is in state ownership and a large proportion of other land also receives subsidy, either for planting or management actions or for 'stewardship' activities through the SFGS (Scottish Forestry Grant Scheme).

forests is to 'increase awareness of heritage values and promote sustainable use' (Scottish Natural Heritage, 2002 p 5).

Additionally, the Scottish Executive and SNH have formal roles in implementing the protection of species included in the Wildlife and Countryside Act and the Nature Conservation (Scotland) Act and through licensing schemes. Similarly, the Partnership for Action Against Wildlife Crime initiative (PAW comprising Scottish Natural Heritage, the Scottish Executive, DEFRA and the Police Service) raises awareness of wildlife crime issues among the general public and specific interest groups. While there are usually elements of good and bad harvesting practice, there are some products that are particularly vulnerable to poor harvesting practice. In Scotland, those that have attracted most attention are mosses, where the whole organism is removed and tracked vehicles are used to extract large volumes of material, and bulbs, where again the whole organism is removed and harvesting is often mechanised and covers large areas. Both of these harvests are of concern where they take place without the permission of the landowner and are therefore in contravention of the Wildlife and Countryside Act (1981).

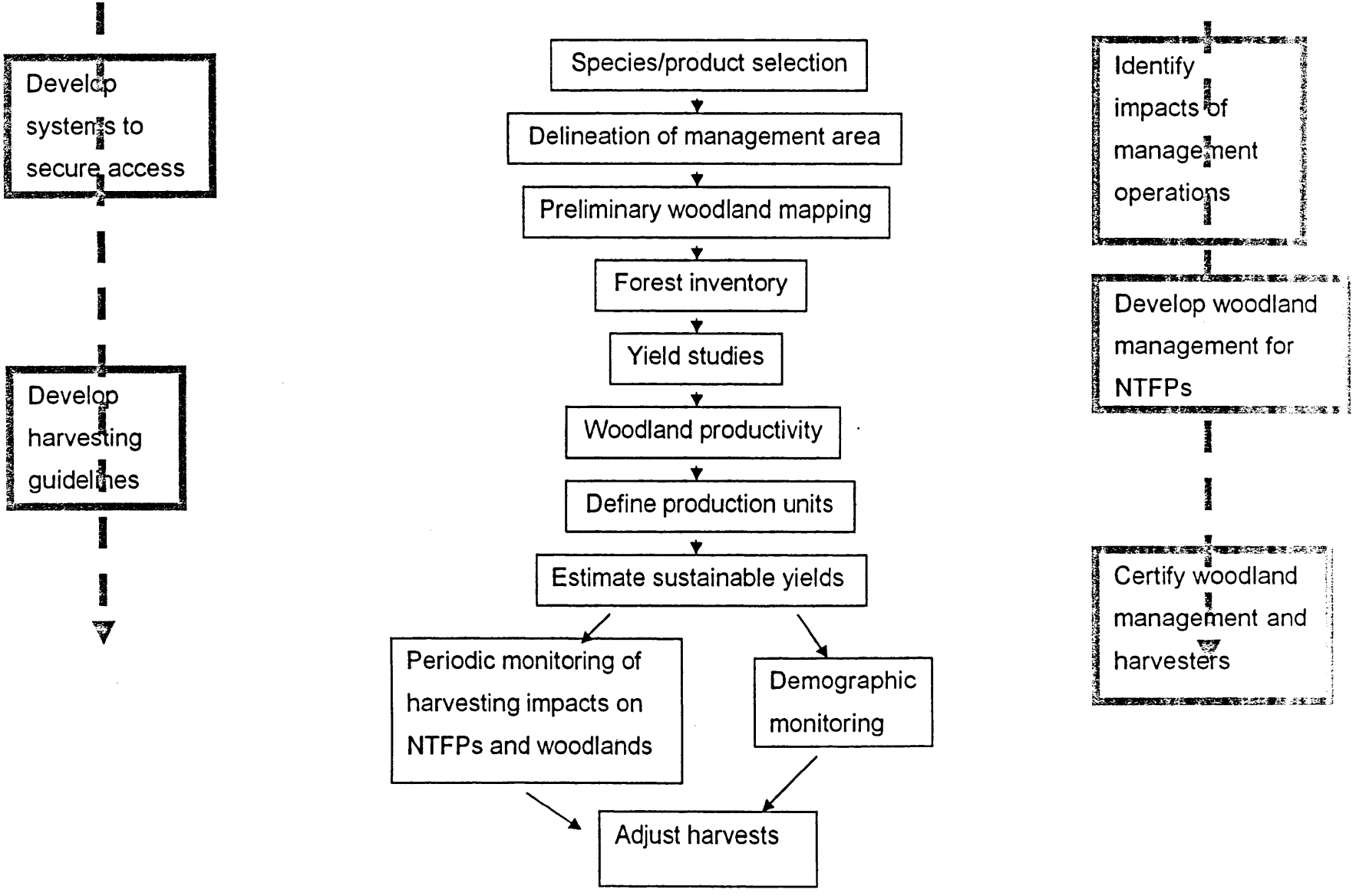
Implementation also takes place through the UK Forestry Standard, to which woodlands receiving public subsidy must adhere, and certification standards. The UK Woodland Assurance Scheme certification standard (the most commonly used standard in UK woodlands) contains reference to NTFPs in its guidance on management planning. Certified woodlands must be able to show evidence that 'authorised harvesting of non timber woodland/forest products does not permanently exceed or diminish the long-term productive potential' (UKWAS Steering Committee, 2000 p 15). The standard does not however make any reference to the impact of management activity on NTFP species or yields.

Existing initiatives

The translation of these policy recommendations into activities currently being carried out is reviewed below. The majority of current activity takes the form of research, with some dissemination and awareness raising and finally the development of some mechanisms for management. To explore these

relationships, Figure 10 presents an adaptation of Charles Peters' model for NTFP management, placed in the context of wider forest utilisation and management and emphasising the role of harvesters' knowledge to produce relevant information and suggesting (by the addition of two new strands of activity) mechanisms for social and economic management must also be developed. Though this model focuses on the development of new activity, it must also, at all stages, take account of the interaction of this with existing activity. At present developments in Scotland are very mush at the first stage of Peters' model, and so there remains very basic information that still needs to be supplied, quantifying harvesting activity and available resources.

gure 10: Management strategy and mechanisms (Centre portion after Peters, 1996 p 59)



Research

Economic benefits

As timber prices for pulp and small round wood continue to decline (Forestry Commission, 2004b), there is increasing interest from government bodies in the growth of NTFP industries, particularly those that will co-exist with the main commercial species (Sitka and Norway spruce and Lodgepole pine). The extraction of chemical components from these species is seen as a possible industrial scale solution to the current problem of oversupply (Watkins et al., 2003). This sort of non timber use of tree species is where the majority of organisational attention has been focused, and some of the pressure that had existed to further commercialise the existing uses of NTFPs for wild foods, crafts and horticulture has declined. That this concentration is primarily on goods that are, in fact, only alternative uses and markets for timber does however continue the mindset of thinking that was identified by participants during the workshop at Lanark (LW2) – only of timber production and particularly of industrial uses for timber. Concentration on industrial timber production is at odds with the scale of current commercial NTFP developments, and as such support for NTFP micro businesses, either to the businesses themselves or to promote the management of woodlands for NTFPs, is unlikely to be forthcoming.

At the same time, several studies have been recently commissioned investigating the value of wild resources and their potential to contribute to the economy. The most immediately relevant of these studies investigated the potential for non timber forest products in Scotland, both in terms of the availability of resources and the markets for these resources (Dyke and Primrose, 2002) and was commissioned by Scottish Enterprise. In 2001 the Scottish Executive commissioned a study on the use and contribution of wild plants (from all habitats) (Milliken and Bridgewater, 2001), which overlapped with similar work by Sanderson and Prendergast (2002) covering England and Scotland commissioned by English Nature and Scottish Natural Heritage. In 2003 IUCN commissioned a study on the contribution of wild living resources in the United Kingdom (Murray and Simcox, 2003). This rash of studies indicates the level of interest that there is in the commercial exploitation of wild resources.

Social benefits

The contribution of forestry to this policy area is being addressed by various organisations including the Scottish Executive and the Forestry Commission through a European COST Action,[53] E39 on Forests, Trees and Health and Wellbeing. The COST Action has a specific working group on forest products, with a focus on medicinals. While in Scotland the use of medicinal products is minimal (Emery et al., 2006), anecdotal evidence suggests that many gatherers engage in the activity because they believe that gathering itself, or the activities that they undertake with the products, have health benefits (Dyke, 1997; Emery, 2004). Another subset of gatherers are able to carry out this type of activity to make a contribution to their livelihood at times when they would not be able to manage conventional work through ill health. Given that harvesting itself is likely to have a greater impact on health than the consumption of products harvested, it would perhaps be of greater value to concentrate research effort on this area rather than on products.

Ecological sustainability

This practice of using gatherers' experience is sensibly being used in the next step towards sustainable harvesting – inventory and monitoring. The only current example of this practice in the UK is a study on moss harvesting in Ayrshire (Kungu, 2005). The involvement of harvesters in inventory and monitoring is problematic, however, due to the conflicting demands of scientific data collection and the commercial realities of harvesting. Contained within this section is a case study on involving harvesters in inventory and monitoring in the US that sets out in more detail the advantages and problems of this approach.

Dissemination and awareness raising

While this range of research exists, information provision on management to potential harvesters or forest managers remains minimal. A series of seminars has been funded by Scottish Enterprise, aimed at providing information to forest managers and potential harvesters. The abundance and importance of domestic and very small-scale commercial use of NTFPs has to some extent been

[53] COST actions aim to bring together research on particular topics across the European Union.

recognised as commercial activity has increased.[54] The focus of efforts is now on creating a balance between increased commercial activities, whilst maintaining the ability of those who currently use the resource to continue to do so.

Reforesting Scotland has also produced general information materials and promoted NTFPs through its magazine, the 'Reforesting Scotland Journal', and through a web based information source; www.forestharvest.org.uk. What is clearly lacking in persuading landowners to become involved in NTFPs in any capacity are examples of successful activities that would be replicable elsewhere. Reforesting Scotland has therefore begun a project, titled Rural Alternatives, designed to develop NTFP use in four community woodlands and to produce and disseminate information materials on the process behind the development of new products in those communities.

As commercial harvests have been encouraged there has also been an increasing recognition of the importance of harvesting for domestic use. In 2004 Forest Research began research into the livelihood importance of NTFPs in two case study areas in Scotland, the Tweed Valley and the Black Isle. This began with a quantitative study of NTFP harvesting in Scotland, based upon a stratified sample of 1000 people that revealed that 24% of the Scottish population had harvested some form of NTFP in the past five years (Tacconi, 1994; TNS Global, 2003; Watkins et al., 2003).[55] These results have proved galvanising, securing funding for further work and the inclusion of similar questions in the Public Opinion of Forestry Survey, with similar figures resulting.[56] The Wild Harvests study focussed on a volunteer sample of participants who largely represent the more enthusiastic end of the spectrum of harvesting for domestic use.[57] The passion displayed by the participants for the products that they

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[54] It is not clear whether the research activity has had any impact on the increase in commercial activity. It is, however, notable that those newly involved in NTFP industries do not come from a forestry background but from a wide variety of others interests and occupations.

[55] Full results are given in Appendix Five and discussed in detail in Chapter Three.

[56] 27% of recent visitors to Scottish Forests had harvested some form of NTFP, again from a stratified random sample. (Snowley and Daly, 2005 p 43)

[57] This would result in selection bias if generalised to the population as a whole, but none the less presents an important body of evidence.

gather and the act of gathering indicates just how important gathering is for many aspects of livelihood – providing income, goods that would otherwise need to be purchased, aesthetic stimulation and health and wellbeing benefits (Emery et al., 2006).

This research provides compelling evidence of the importance of harvesting as an activity – indicating that harvesting is an integral part of forest use by the general public. Nonetheless there is still a reluctance to accept its importance at policy level – NTFPs are still seen as just a few mushrooms and berries with little prospect for large-scale commercial activity and therefore of little interest, other social and community benefits being largely neglected.

Management mechanisms

Voluntary codes of practice for harvesting[58] are increasingly being promoted as a means of encouraging sustainable practice. In part the motivation for codes of practice comes from international pressure to manage use of wild plant products, and in particular the recommendation of the Global Strategy for Plant Conservation for standards that codify good practice, mentioned earlier. With this in mind, the codes of practice being developed in Scotland have several purposes; including:

- To provide guidance on sustainable harvesting to harvesters, contributing to certification standards.
- To provide guidance to landowners.
- To open communication between harvesters, traders, landowners and government and NGOs to ensure a greater understanding of each other's concerns.

Notably lacking from the research efforts is biophysical work to help understand harvesting levels and methods, without this work, codes of practice at present have to rely on good practice suggested by the experience of harvesters in the absence of scientific data. However, this data, together with harvesters' experience, should be central to any management strategy. Also lacking from

[58] A code for fungi harvesting exists (Dyke, 2001) and codes for mosses and bulbs are in progress.

this review of current activity, with the exception of codes of practice, are mechanisms of management. Also lacking from this review of current activity, with the exception of codes of practice, are mechanisms of management. As information needs are so great, efficient ways must be found to gather data. The following case study shows how similar motivations have led to the involvement of harvesters in inventory and monitoring activity in the Pacific Northwest.

Case study from the Pacific Northwest: Involving harvesters in inventory and monitoring

In recent years the harvesting of non timber forest products has come to greater notice in the Pacific Northwest, generating concern for the possible ecological impacts of harvesting and the desire to monitor and assess impacts. Inventory and monitoring (I & M) of non timber forest products, however, has always been problematic, both technically and also in attracting sufficient resources to make adequate assessments to influence management. There may not be pre-existing techniques for monitoring the species in question, and as the impact of harvesting on the wider habitat and non target species may also be a concern, meaning that techniques for monitoring these too have to be developed.

Involving harvesters in inventory and monitoring has developed from the wider involvement of local people in natural resources management. Rural development forestry has seen increasing involvement of local people, in part because it is impractical not to involve communities in the decisions that affect their livelihoods. These same motivations apply, resulting in an approach that also recognises that harvesters either already have the information that is needed or could efficiently collect data at the same time as harvesting.

The majority of I & M projects take place with the objective of influencing on the ground practice: whether in terms of monitoring the impacts of harvesting, and setting sustainable harvesting limits and methods, or enabling harvesters to be more efficient and effective in their harvesting practice. In many cases, however, very little is known about either the species being harvested or the impact of harvesting. As a result I & M projects may also set out to increase this knowledge or fill in gaps. Data must be produced that will satisfy the requirements of scientific rigor and therefore gain the trust and the acceptance

of those who hold or influence decision making authority. At the same time data must also be useful to resource managers and harvesters in their on the ground management, and they must be satisfied that data collection will actually be beneficial to them long-term, if not immediately in their short-term interests. These two requirements produce some conflict in the level of precision that is required, and that which it is possible to achieve with harvesters as researchers, limiting the type of data that can be collected in this way, but maintaining the potential to address issues relating to sustainable harvesting.

The three examples covered in this study vary in stage of completion, product focus, geographical area and in objectives (see Appendix Six for more detailed descriptions of the case study projects). In common, the examples reflect the desire of organisations to gather information to inform the regulation of harvests. The three examples and their likely impacts in the longer term are analysed through the development of a framework, leading to conclusions and recommendations on the involvement of harvesters in future I & M projects.

1) **Salal**

Harvesters recorded the location of collecting sites in order to pinpoint biophysical requirements and management histories for commercial quality salal (a floral green harvested extensively in the Pacific Northwest). This project which only began recently is located on Vancouver Island and brought together harvesters and academics.

2) **Moss**

This project has completed the first phase of data collection is located in the Hebo Forest District, Oregon Coast, and involves a harvester, researchers and forest service employees and involved gathering data on mosses harvested from the ground, on logs and on trunks and from the tree canopy for the floral and horticultural industries.

3) **Matsutake**

A continually evolving study that has been going on for many years, collecting and analysing data on the harvest of matsutake mushrooms at several locations in Southern Oregon and the Cascades. This study is an ongoing partnership between a mushroom harvester and Forest Service employee.

Analysis

The case study projects have been relatively successful on their own terms at meeting their most immediate objectives in collecting data; however the longer term objectives of impacting on management practice, policy determination and the employment of good practice will be the real tests of success. The three case study projects are all at different stages of completion and none have yet reached a dissemination stage. In terms of when and how harvesters are involved, participatory research literature is quite explicit about the advantages to the validity of research results of involving participants on equal terms and at all stages (Heron, 1996).

Many factors come in to the determination of the level of harvester participation in research grouped in three major areas: *when* harvesters are involved; *which* harvesters are involved; and *how* the harvesters are involved. Drawing these elements of when, which and how together, it is possible to make some assessments of how likely these projects are to succeed based on the characteristics of the involvement of harvesters.

In developing a framework for analysis it is necessary to review several of the continuums of participation that have been developed since Arnstein's original ladder of participation in 1966. Dovie et al (2000) propose a simple three level continuum for harvester involvement, but in order to reflect the findings of these three case studies the following table has taken Carter's adaptation of Cornwall's 1995 continuum and adapted it further to refer directly to harvester involvement in inventory and monitoring (Table 18). The amount of power and decision making authority held by harvesters increases down through the continuum, as does harvester involvement throughout the life of the project and the variety of harvesters involved. Experience from these case studies shows that there is more to sustaining involvement than according decision making power – for instance, the harvester interviewed for the salal study stated that he wanted only to be involved in data collection on a very basic level. Sustaining the involvement of harvesters is as much about being involved on their own terms, to the degree that they want, with rewards commensurate to the task.

When harvesters are involved

Table 19 shows at what stage harvesters were involved in the project. With the exception of the matsutake study, harvesters are only involved in the middle, data collecting stage. The determination of objectives and dissemination of findings are the responsibility of the project initiators. As harvesters in two of the three projects are only involved at the data collection stage of the projects, their ability of influence project design, the way that data is interpreted and the impact it has on on the ground activity is very limited. Harvesters' involvement in the research design stage could have identified areas where harvesters have existing knowledge, such as in the case of the salal study, their own criteria for selecting harvesting sites. Research design could then be streamlined to concentrate on unknown factors.

Which harvesters are involved?

Once projects are complete, information will be disseminated to harvesters and will be included in regulation. Involvement of a good cross section of harvesters increases the likelihood that these new recommendations will fit with all types of harvesting practice. Almost all interviewees mentioned a distinction between 'old' harvesters and 'new' harvesters based on the gender, racial and geographical make up of the harvester population.[59] In these examples the harvester populations are now predominantly made up of 'new' harvesters, characterised as being of non-Caucasian origin (varying with case study project), as not based locally to harvesting sites and sometimes seasonally migrant. However, it is the 'old' style, locally based, mainly Caucasian harvesters who are involved in inventory activity (for more detail see Table 27, Appendix Six).

There are many difficulties in involving these 'new' harvesters. Firstly, because local Forest Service staff are unlikely to have built up the same long-term relationships with them that they have with the remaining 'old' harvesters secondly, because many of them have little English, thirdly, because they may only be present for a few weeks each year. The difficulties in communicating

[59] In fact, there have been several historical waves of harvesters becoming involved in each of the industries, but there have also been recent trends in the type of harvesters involved.

with new harvesters further limits who is likely to be involved, as it tends to be male harvesters who do have some English and therefore have the interface with officials. The problem is that as these new harvesters now make up the majority of the workforce and dissemination will need to be aimed at them in order to be successful. In the case of the salal study, it is the more established new harvesters who are involved in data collection, but these harvesters have enough harvesting sites to keep them supplied, and it is those who are very newly involved in the industry who would benefit most. The more experienced harvesters would be well placed to transfer their expertise to newer harvesters, but at present there are no plans for them to be involved in the dissemination stage.

How harvesters are involved

How harvesters are involved in I & M has a major impact on the sense of ownership that they have over the research, and consequently the good will that will be shown towards the application of research results to on the ground practice. All of these projects have had funding difficulties and gaps in provision, gaps that are often filled by volunteer labour. Though research initiators have often worked voluntarily to ensure that research continued, a great deal of that effort has been on the part of harvesters. This indicates the kind of priority given to these studies by organisations and is another indication of why harvesters who are entirely dependant on the income from harvesting are unable to participate.

The role that harvesters have in inventory and monitoring also influences the amount of decision making power they have and the amount of influence harvesters will have on the use of research results. Using Cornwall's categories of harvester involvement, harvesters' roles in each of the projects are analysed in Table 19. Many projects fall across these categorisations, or at one stage resemble one before becoming another. Because of these movements up and down the scale, the table indicates the harvesters' roles at different stages of each project. This diagram shows that only in the matsutake project does the harvester have any significant or continuous amount of decision making power.

Table 18: Continuum of participation in inventory and monitoring projects. Based on Cornwall (1995) and Carter (1996).

Mode of harvester participation.	Types of participation.	When harvesters are involved in inventory and monitoring.	Which harvesters are involved	Role of harvesters in Inventory & Monitoring.	Potential for sustaining harvester involvement.
Co-option	A few harvesters are chosen to participate, in order to make use of their skills and experience, but have no real power.	Data collection only	Only those known to project initiators.	Subjects	**
Co-operation	Harvesters are assigned tasks with incentives of some kind; managers/scientists decide agenda and direct process.	Middle stages		Employees	**
Consultation	Harvesters are asked for their opinions and input; managers/scientists analyse information and decide on course of action.	Middle stages		Clients	***
Collaboration	Harvesters work together with managers/scientists to determine priorities; managers/scientists direct process.	Middle stages		Collaborators	****
Co-learning	Harvesters, managers and scientists share knowledge to create new understanding and priorities; managers/scientists facilitate process.	All stages		Partners	******
Collective Action	Harvesters set and implement their own programme; managers/scientists involved on harvesters' terms.	All stages	All who harvest in the area	Directors	*********

Table 19: Harvesters' roles in case studies through all project stages.

Project	Project stage				
	Research initiation	Research Design	Data collection	Data Analysis	Dissemination
1) Moss	Absent	Absent/Subjects	Subjects/Employees	Absent	Absent
2) Salal	Absent	Absent	Subjects	Absent	Absent
3) Matsutake	Partners	Partners	Partners	Partners	Partners

As Table 19 shows, only one of these projects comes out well on the continuum of participation, this indicates that other I & M research is unlikely to produce *practice* relevant and workable findings. Similar issues are likely to occur with the involvement of harvesters in inventory and monitoring in Scotland. Similar divides exist in harvesters involved in legitimate and informal commercial harvesting. Institutions commissioning inventory and monitoring need to involve the widest variety of harvesters at the earliest stage in order that they can direct research towards knowledge gaps and ensure that methodologies both conform to commercial realities and are feasible.

SECTION 2: ORGANISATIONAL ABILITY TO INFLUENCE NTFP USE.

This chapter has explored how government and support organisations have identified social and economic benefits of NTFP harvesting, and also the role that management of NTFP harvesting plays in ecological sustainability measures. This section explores *how* organisations are able to influence NTFP use in these directions. This analysis is also placed within the external pressures of national and international policy, and the structure of relations with landowners and gatherers, described in Section One. As in previous chapters, Ribot and Peluso's theory of access is used to structure this discussion. Bearing in mind the information needs already explored in Section One, and the mechanisms for management presented, this chapter concludes by suggesting how these needs could be met.

Rights based access

Legal rights

Government bodies have influence over almost every aspect of rights based access, including: rights of access to the land, as discussed in Chapter Two; the ability of businesses to access resources through health and safety controls; the access to capital and business support, both discussed in Chapter Three; and in determining the responsibilities of landowners for the safety of those on their land, as discussed in Chapter Four. Both government and non government landowning bodies also have the ability to impose restrictions on harvesting through the imposition of byelaws.

While it is eventually government that decides on the form of legislation it is a range of government agencies that have the largest role in developing the content of legislation and, most importantly, carrying out and interpreting the results of public consultations. The most recent pieces of relevant legislation to go through consultation process have been the Land Reform (Scotland) Act 2003 and the Nature Conservation (Scotland) Act 2004. Here it could be argued that in the case of the Land Reform (Scotland) Act in particular, the public consultation did not adequately address the impacts of the legislation on commercial gatherers, and indeed, made no specific effort to target this group. The Standing Orders of the Scottish Parliament demand that Bills introduced by the Executive should include a policy memorandum setting out:

> An assessment of the effects, if any, of the Bill on equal opportunities, human rights, island communities, local government, *sustainable development*, and any other material which the Scottish Ministers consider relevant. (Scottish Parliament, 2003 my italics)

As chapter Three discusses, the process of amendments moving from the exclusion of extractive activity to the exclusion of commercial activity to the exclusion of extractive commercial activity from the right of access, indicates that the implications of access for extractive commercial activity must have been discussed, but either without consideration of the impacts on sustainable development, or without sufficient knowledge (given their exclusion from the consultation process) to be aware of the likely impacts on NTFP businesses.

Where NTFPs are actively managed to produce crops (such as Highland Natural Products' plantings of bog myrtle) in a situation analogous to agroforestry, as discussed in Chapter Four, there is an ambiguity about how land should be classified and therefore whether it should be excluded from the right of public access. In the Land Reform Act a crop is defined as 'plants which are cultivated for agricultural, forestry or commercial purposes', which would include planted, non tree crops. Where an NTFP is managed to improve yields and value, landowners are understandably nervous of any risk of losing the investment they have made by harvesting activities by members of the public or commercial harvesters. This ambiguity represents another unanticipated difficulty with the implementation of the Land Reform Act.

Byelaws and restrictions

As a state landowner, The Forestry Commission has byelaws that govern the use of its land. These byelaws are designed to both prevent damage to habitats and to protect state assets. Where public access is one of the main management objectives at a site, such as on nature reserves, there are often restrictions on harvesting put in place by both NGO and government landowners to ensure that visitors are able to enjoy the full range of species that would naturally be available.

Implementation

Alongside their influence over the making of legislation, and with a perhaps more immediate impact, is the role of government agencies in implementing legislation. Under the subheadings of legal rights and customary rights the following discussion explores how the extent to which legislation is adhered to varies greatly.

Legal Rights

As Chapter Four examined, in practice, the Forestry Commission's byelaws, which comprehensively forbid the harvesting of wild products for commercial or non-commercial purposes, are very rarely implemented. It is of course up to the Forestry Commission when and to what extent it enforces its byelaws. In effect, they are used as a backstop position only called upon when there is something that the Commission particularly wants to prevent, such as an instance of bad harvesting practice. While it is necessary that the landowner should be able to prevent bad practice, it is unreasonable and un-transparent that the official default position is so contradictory to the practice that is implicitly encouraged.

While regulations relating to the operation of business and protecting pubic safety are typically strictly applied it is perhaps an indication of differing priority (and also an indication of the difficulty of implementation) that laws governing access to land are rarely effective (as described in Chapters Two and Four). In fact it appears that until very recently the legal position in respect to both commercial and non-commercial harvesting has been kept deliberately

unclear,[60] (implying a tacit acceptance of customary practice), as a result of overlapping legislation which did not forbid harvesting but at the same time did not explicitly allow it. This lack of clarity makes the law difficult to implement. While the position on commercial harvesting has become clearer with the Land Reform Act, the position on recreational harvesting is much the same as before, neither strictly illegal nor explicitly permitted. This is perhaps in an attempt to allow such harvesting to continue de facto in the same manner that it has done for centuries.

This situation is described by Bromley (1985) as the 'myth of management', whereby decisions that are made at policy level and transformed into rules and procedures at organisational level do not necessarily have the designed effect at operational level. He describes this layering of incongruent institutional structures as 'institutional dissonance'. As Geores (2003) theorises, this is a problem of resource definition and scale, where authoritative and allocative policy and management operate on different spatial scales. While the legal structures discussed at the beginning of this section set out to govern authoritative rights over resources nationally, policy documents fail to make provision for implementation and allocative rights at a local level. In addition to this spatial dissonance, there is also an issue of temporal dissonance, whereby policy decisions taken at International and European levels are subject to a series of time delays as they are formed into national policy and legislation, then into procedures for implementation at an institutional level, and then used in practice at a local level. Both spatially and temporally, this institutional dissonance is manifested in a missing layer of policy and management that makes it difficult to govern resources at an operational level.

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[60] The consultation document for the creation of the Access Code accompanying the Land Reform Act acknowledges that access for commercial purposes was one of the most contentious areas of discussion in the development of the Act. With reference to the section dealing with the exclusion of access for extractive commercial purposes, the document says: 'Access for other commercial purposes or for profit are excluded from access rights, including taking anything away from the land for commercial purposes or for profit. It is considered that this would include, for example, collecting mushrooms and other fungi and moss as a commercial venture. However, people have traditionally picked wild fungi and berries for their own consumption and many people would feel that this is a reasonable practice which should continue if done responsibly, although there is no provision in the Act for such activity' (Scottish Natural Heritage, 2003 p 25). This illustrates again the perspective that customary practice often takes precedence over legal measures.

The opening of commercial harvesting to scrutiny through the Land Reform Act is bound to also impact on non-commercial harvesting. Given that commercial harvesting without the permission of the landowner is now illegal it is almost inevitable that commercial harvesting will become more formalised through permit schemes. It is telling that the product areas that have the most obvious separation of commercial and non-commercial activity – and where commercial activity is on such a scale for permitting to be affordable to harvesters – such as moss and floral greens, already have harvesting contracts in existence (though these are by no means widely applied). With products where there is greater overlap between harvesting for personal use, harvesting for gifts or exchange and harvesting for sale, permit schemes are much more problematic. See Appendix Eight for discussion of the implementation of permit schemes and other measures.

There is a common acceptance in customary practice that harvesting for personal use should be freely accessible, while those who harvest for small scale sale or exchange are often anxious to act within the law (and the bounds of what landowners consider reasonable) but are uncertain how to go about it and worried that compliance might obliterate any margins (Emery et al., 2006). This kind of activity is additionally complicated because gathering activity often combine different purposes: some for personal use, some for gifts or exchange and some for commercial use. The difficulty in separating out the uses to which collectors put their harvest is faced by managers elsewhere. As described in Chapter Two, McLain (2000) goes so far as to suggest that the very act of labelling of harvesters equates to what Foucault (1979) describes as the exertion of disciplinary power, fixing pickers into uni-dimensional categories that do not reflect the flexibility of their lives. The resistance that harvesters feel towards being categorised creates a situation where administering separate regulations for each of these activities would be next to impossible. See Appendix Nine for discussion of the implementation of permit schemes.

In keeping with the underlying principles of the Land Reform Act, it seems sensible that the right of access should be accompanied by the requirement to behave responsibly. Therefore harvesters acting for their own use or in the grey

area of small-scale commercial use or exchange should be self-regulating, with permitting being reserved for larger scale commercial users. The main difficulty in this arises from the lack of representational body for harvesters, and therefore the difficulty of collective action or in consultation with this group as a whole.

Customary rights

Discussion of legislation, permit schemes and other explicit access rights, however, needs to be framed by the more subtle and elusive perception of customary law and access rights (as discussed in previous chapters). It seems likely that the confusion in the legal position concerning harvesting for domestic use is in part due to recognition by government agencies of customary rights and an unwillingness to disturb the status quo whereby NTFPs are considered common property resources. It would not be possible to legally allow for harvesting for domestic purposes without changing fundamental aspects of property rights under Scottish common law; nor to outlaw such practice without overturning centuries of customary activity. As a result customary rights remain dominant to the practice of harvesting for domestic purposes. Due to the lack of legal implementation and therefore of public knowledge, customary rights tend to be applied by extension to the majority of harvesting for commercial purposes.

By definition customary rights are fluid and ambiguous. The imperfections of more explicit legislation allow such rights to continue to direct both practice and the acceptance or rejection of laws and byelaws. As a result, it would be useful to reflect common practice by considering access for NTFP harvesting a situation of unregulated open access, where the usufruct rights are separated from the rules and sometimes also the responsibilities of management. Fortmann (1990 p 196) refers to this separation as 'truncated customary property law'. However, many do see themselves as custodians of the resources. Therefore it would be useful to reflect common practice by considering access for as non-commercial harvesting a 'customary commons'. By extension, given the overlap in activities as commercial harvesting has developed, it too should be considered a more contentious, but none-the-less existent customary commons.

Structural and relational mechanisms of access

Access to technology, equipment and markets

The ability of businesses to carry out processing and to access markets is governed by a raft of safety legislation – including the Health and Safety at Work Act (1974) and, for food businesses, EC regulation 852/2004 which came into force in January 2006 and standardises procedures for control of hazards (Food Standards Agency, Undated-b). Businesses must have permanent procedures for dealing with cleaning, chilling, cooking and cross contamination and employees must have suitable training. Premises where food is prepared must be registered under the Food Premises (Registration) Regulations (1991).

Herbal medicines are either viewed as foods or as medicines depending on their use: if they are viewed as a food they may need a safety assessment by the Food Standards Agency before sale; if they are viewed as medicines they must be assessed by the Medicines and Health Care Products Regulatory Agency (Food Standards Agency, Undated-a). An EU directive on traditional herbal medicines has recently come into force (The Medicines Regulations, 2005), allowing a relatively fast procedure for products with a history of more than 30 years safe use to be registered for sale. This directive also covers the labelling and advertisement of products, requiring clear statement of safe doses.

It is of course necessary to protect public safety, but the impact on businesses is a significant burden of administration in complying with regulation. It is in the implementation of these regulations that they become onerous, particularly for very small businesses.

Regulation influences the way in which businesses relate to harvesters by the level of administration involved in creating formal relations. NTFP businesses and harvesters need to operate flexibly as supplies of the product and prices fluctuate. Informal relations therefore put the burden of dealing with tax obligations onto harvesters and make a larger and more complex task for the authorities in assuring compliance. However, these forms of regulation are relatively unambiguous (apart from in the case of deciding the status of new

products), with clearly associated procedures, and as a result they are relatively easy to administer and therefore are more vigorously pursued.

Access to capital

As Chapter Three discussed, financial services for businesses – in starting up, product development and ongoing support – are significantly skewed towards larger businesses and businesses that can expect fast growth. In contrast, as explained, the majority of NTFP businesses do not fit these and therefore do not receive much support.

Access to capital, as Chapter Three also explored, is not easy for those who operate in the grey economy and may also be a barrier to businesses legitimising their operations. For those who do not have a bank account and operate in cash, it may be far more attractive to remain in the grey economy than to have to deal with the additional administration of income tax and national insurance for a relatively small amount of money.

In terms of grants administered by government agencies and other organisations woodland management for NTFPs is also problematic. Under current structures, the Scottish Forestry Grant Scheme (SFGS) does not allow for management activities to promote NTFP production, sustainable harvesting or the promotion of access for the purpose of harvesting. This is the result of a strong tradition of separation between agriculture and forestry preventing overlapping uses. In order for certification of NTFPs to be feasible such grant structures would have to be amended. In fact these two things, the provision of subsidy for management and the development of guidelines, must be concurrent as grants could not be given without standards to measure the resulting activity. The lack of supportive grant structures to invest in forest management is a major impediment to the development of NTFP use on any scale.

Physical and topographic factors

The physical accessibility of forest areas influences the percentage of available resources that are actually harvested. While most NTFPs are not harvested in

sufficient volumes to require specialised transport, the state of road networks does influence the viability of taking products out of remote areas. Distance, coupled with high fuel prices, means that in remote areas unless products are used locally they must either be high volume or high value. In less remote areas forests themselves might be made inaccessible by lack of access to private roads. In the case of Forestry Commission roads, gates are often locked. On private land, the right of access does not extend to vehicles and so areas of woodland that are far from the nearest access point may not be possible to reach in a reasonable period of time on foot, or possible to carry out the product by hand. Formalising access to resources would enable harvesters to reach a larger percentage of the available resource by opening up the use of forest roads through permission.

Access to knowledge

New products being harvested and processed on a significant scale are likely to come up against a lack of guidelines or procedures: whether this is concerned with harvesting on designated sites, harvesting methods or standards of processed material. Just as there are different agencies to deal with herbal medicines when viewed as foods or viewed as medicines, so there is often also confusion about what is the appropriate body to deal with new products. Douglas Hardie, of Highland Natural Products, describes coming up against repeated barriers in the development of new bog myrtle extracts because of the apparent ambiguity as to whether bog myrtle production constituted agriculture or forestry, making it unclear as to whether SEERAD or the Forestry Commission was the appropriate administrative agency (Hardie, 2005). A common complaint would be that, when dealing with agencies at an operational level, if there is no precedent then there are no appropriate guidelines to use and it is often easier to refuse permission than to develop new procedures. Change often requires enthusiasm from policy level for operational level officials to be able to deal with new products.

Government agencies rely on expert knowledge for decision making. However, much of the knowledge on NTFPs is held by harvesters – people who would not conventionally be deemed expert in a formulated sense. In order for this knowledge to be put in terms that are accessible to decision makers it often has

to be filtered and 'translated' by others. This process has two effects. Firstly it divorces the knowledge from its origins, turning practical, day-to-day knowledge into policy relevant expert knowledge. This removes the harvesters' voice from any possibility of direct influence in policy making. Many of the recent studies on NTFPs and wild harvested products may have inadvertently served this purpose by creating the appearance that the opinions and expertise of harvesters has been represented. Secondly, by adding a layer of translation between the harvester and the policy maker there is an issue of intellectual property rights. The harvesters' knowledge is in some sense being claimed by the author of the study, giving them the expert status that should remain with the harvester. That said, there is obviously a role for studies that analyse NTFP use and bring together the opinions and knowledge of harvesters to inform policy on a scale where it is not possible to consult in detail with individuals. Harvesters are, however, particularly vulnerable to appropriation of knowledge as there is no representative body.

Government agents use their position to give statements about harvesting rights the appearance of knowledge and authority. This position of authority is used to give recommendations which appear to have absolute legal backing. An example of this is the Scottish Natural Heritage booklet on wildlife law, which states that:

> Wild flowers should not normally be picked. The flowers are an essential part of the reproductive cycle and picking flowers may prevent the plant from setting seed and surviving into the future.[....] Technically wildflowers belong to the landowner and taking them may also be theft. (Reid, 1998)

While this may be true, it is stretching the point legally as the Wildlife and Countryside Act does not forbid the picking of reproductive parts (though it would constitute theft under common law). Additionally, picking would have to be extensive and repeated to damage plant populations unless they were already endangered in which case they should be protected by specific measures. The Scottish Executive leaflet ' Wild Plants and the Law in Scotland' also oversimplifies information, at the same time as taking on the mantle of authority, stating inaccurately that collection of the seeds of wild hyacinth is

illegal through its listing on schedule 8 of the Wildlife and Countryside Act. In fact, wild hyacinth has a special listing on schedule 8, making only selling or advertising for sale an offence.[61] Licenses for the collection and sale of wild hyacinth seed are available from the Scottish Executive.

Similarly Emery, Pierce and Schroeder report that in US the National Park Service pamphlets usually include a statement to the effect that no picking of wild flowers is permitted. This is despite the fact that national park compendia allows for limited collection of reproductive parts from plants in national parks (Emery et al., 2003). There are many examples of how 'authoritative' knowledge is used to instil social responsibility in the general public, but without crediting them with any capacity for detailed knowledge. The same principles are not applied, however, to information directed at management activities. Management activities such as the felling of timber – which will have a devastating and lasting impact on the presence of mycorrhizal fungi, mosses and ground flora – are not subject to the same blanket bans.

Traditional knowledge and new expert knowledge

As the previous section discussed, documentation of knowledge held by harvesters, whether this is traditional ecological knowledge or new expert knowledge that has been developed to deal with new harvests, inevitably claims at least a degree of ownership of that knowledge. As with landowners, an acceptance and familiarity with a particular type of expert knowledge, limits the extent to which traditional ecological and new expert knowledges can be utilised.

Access to authority and decision making power

While there are wider agendas to contend with, such as the European Parliament and European legislation and International agreements and target setting, in the case of the government agencies described in this chapter, access to authority and decision making power is dependent on communication

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[61] Licenses for the collection of wild hyacinth seed are under development by the Scottish Executive, but are complicated by the difficulty in distinguishing between wild hyacinth, the non-native Spanish bluebell and hybrids of the two. The Executive is waiting for a reliable genetic test to determine species before issuing licenses. Meanwhile, illegal and unsustainable harvesting of wild hyacinth continues and Spanish bluebell bulbs continue to be sold as native stock.

between agencies and the Scottish Parliament. What is perhaps more crucial to the ability of agencies to influence practice on the ground, however, is the way in which they are able to engage with the NTFP users themselves.

Consultations

Though the general public are able to respond to any consultation they wish to, they first have to be alerted that it is going to take place and that it would be worthwhile taking the time to respond. As Chapter Two explored, interested groups and individuals are unlikely to be aware of the existence or relevance of any consultation without a specific effort being made to contact them. In some cases interest groups take on a consultation and use their own networks to publicise and issue and encourage interested parties to respond. Neither of the most recent pieces of legislation (the Land Reform Act 2001 and the Nature Conservation (Scotland) Act 2004) saw campaigns to consult with gatherers on the likely impacts, apart from in the case of the Land Reform Act, some efforts by Reforesting Scotland.

Implementation

This lack of consultation at the policy development stage has only added to the difficulty of task of implementation. There have been a series of public information campaigns through media advertising since the launch of the Land Reform Act to encourage the public to act responsibly and to seek out further information on the rights of access that the Act provides. However, the target audiences given in SNH's promotional campaign programme do not include extractive commercial interests (Pollock, 2004). Instead, these campaigns have been directed towards recreational users of the countryside and so do not appear to give any indication that the Act is anything that commercial harvesters need to concern themselves with.

Licensing

Scottish Natural Heritage is responsible for issuing licenses for the collection of species listed on Schedules Eight and Nine of the Wildlife and Countryside Act, and therefore make the decisions as to where, when and how these activities are allowed to take place. It is the Scottish Executive, however, that is responsible for developing licensing schemes for specific species. The

availability of clear guidelines and procedures would to a large extent govern the ease with which a license can be obtained and therefore the responsibility lies with the Scottish Executive to ensure harvesters are encouraged to obtain licenses through straightforward procedures.[62]

Decisions about harvesting on designated sites are generally made at a local level by SNH. As detailed in the section on access to technology and markets, without clear guidelines it may be difficult to make a decision at a local level, and officials are cautious about setting precedents. Harvesters and processors are, therefore often faced with the likelihood of receiving a refusal at a operational level or of trying to obtain permission by going to officials at an institutional level.

Mechanisms of access are an organisation's ways of engaging with on the ground practice. Like other groups, their efficiency in influencing the use of NTFPs is governed by knowledge. As discussed in other sections, due to a lack of often the most basic knowledge, an agency's capacity to influence the way in which NTFPs are used is severely hampered.

Institutions for management

Given the current vacuum in communication between groups of stakeholders and in management of resources, additional roles in facilitating communication between groups and developing mechanisms for management are necessary for government agencies:

- Contributing to the development of national level systems for communication with groups involved in harvesting and providing direct linkages to policy makers.
- Developing systems to enable self-management of resources by stakeholders through guidelines, permitting, subsidy, certification of resources and accreditation of harvesters.

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[62] The licensing division at the Scottish Executive was dissolved in March 2006, and therefore the responsibility for this role is currently unclear.

The customary commons of access to NTFP resources justifies the further participation of harvesters in the management of NTFP resources. The self-identity of some harvesters as 'outsiders' may hinder participation, promoting a sense that they are responsible only for themselves and their own actions. The cumulative effects of their own and others actions are something that individuals should concern themselves with – not least because few harvesters have exclusive harvesting rights and there is a potential impact on the future availability of resources to themselves. Additionally, the cumulative power of harvesters' knowledge to manage resources effectively is an equally strong justification and motivation for bringing harvesters together. At present harvesters are denied rights to influence management (and in some cases inadvertently deny themselves this right), and so institutions are necessary to develop effective mechanisms for this participation.

Bringing together all those involved in harvesting through institutions for management is not necessarily the responsibility of government agencies, additionally, for institutions for management to be effective; there must be strong validation from harvesters. Any sense of coercion to cooperate is likely to result in non-compliance. Consequently, to give institutions the greatest chance of effectiveness, the impetus must come from non-government sources. Government agencies do, however, have the responsibility to ensure that resources are used sustainably, and have the ability to provide overarching networking and democratic accountability, so good vertical and horizontal linkages to and within government agencies are also necessary.

There is a legitimate argument as to the danger in creating institutions and processes where there is no direct history of cooperation, and legitimacy would need to be built along with the institution (Arnold, 1998; Cleaver, 2001). However, the community woodland movement that does exist in Scotland creates a good precedent of formalised cooperation between diverse interests and of fostering empowerment to manage what has, like NTFPs also been a customary commons. Scottish rural communities also have a history of

formalised institutions,[63] though there is no need for these to dominate. Socially embedded processes that go on around formalised processes are often equally important. At present we have a situation where there is little scope for informal involvement in the management of NTFPs, and it seems preferable to develop a formal institution from which for socially embedded processes can arise, rather than have no facility for involvement in management.

The suggestion is not that institutions should directly assume managerial responsibilities; instead this is an argument for cooperative rather than communal management. Here it is worth bearing in mind the criteria suggested by Arnold (1998 p 40) to develop locally appropriate systems of management as well as to develop national systems, where clear boundaries are set for the resources in question, the way in which decisions are made and the users and their status, but also for allowing change in the terms and functioning of the institution. In terms of both the potential for an overarching institution for the management of NTFPs, and for local management groups, Arnold's exhortation to 'achieve a correct match between institutions and their physical, biological and cultural environments' is valid. In the criteria given above, Arnold is advocating for clarity:

- for local natural resource management institutions that govern clearly defined resources;
- have clear procedures for decision making that allow the institution to grow and change as needed;
- have clear relationships without side bodies;
- and where not only is there is a clear need for cooperative management but where it will give the most efficient outcomes.

The inefficiencies of use outlined in this and previous chapters, together with the lack of opportunity to communicate and the lack of capacity in current systems of use to deal with change, make institutions for collective management a viable alternative means of allowing harvesters to use their expert knowledge to greater effect. The systems that could be created through institutions for self-management would allow harvesters greater opportunity to ensure good

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[63] Naomi Mitchison's (1997) novel 'Lobsters on the Agenda' is an interesting example of this, suggesting at its worst a Scottish obsession with committees, but also more positively, of the interaction of these with socially embedded actions, the discussions in the various religious, social and trade groups influencing practice.

practice in harvesting, with effective, peer-policed, sanctions. Harvesters and landowners would also be able to share greater responsibility for resources, by considering the cumulative impacts of harvesting, potentially damaging management actions and through positive actions to increase yields. Institutions must have the right structure though – to provide clear boundaries and remit and legitimacy built through careful processes of representation.

A final structural reflection

As the last of a series of chapters in the body of this thesis it is appropriate to have a final structural reflection on the use of Ribot and Peluso's theory of access. Throughout these chapters, various difficulties in applying the theory of access arise, and in this final structural reflection these are brought together. Coming back to the use of political ecology as disciplinary approach, it is worth reviewing debate within the discipline with reference to the application of this particular theory. Political ecology developed as a redress to earlier approaches which tended to focus on ecology without the influence of political factors. Vayda and Walters (1999) accused political ecology of going too far, of indulging in 'politics without the ecology', and relying on a priori assumptions of political influence. However, they were also working with a somewhat different definition of political ecology; as a means of explaining environmental change. Peluso does acknowledge the assumption that larger social structures and socio-political structures will affect local level resource users (Peluso, 1992) but seeks to review the influence of these factors on access to and availability of resources rather than seeking to explain causes of and reactions to environmental change. However, environmental events must not be underplayed, and as Chapter Four describes, the predefined nature of Ribot and Peluso's theory does discourage the consideration of temporal factors, and an additional layer of analysis is therefore needed.

The structural reflections contained in each chapter reveal several other difficulties in applying Ribot and Peluso's theory. As already noted, these often stem from the pre-defined nature of the theory – as Chapter Two describes, for example, issues are sometimes underplayed by their inclusion under several different headings, and it is not until these are regrouped and analysed together that the impact of an issue becomes apparent. A second difficulty emerges

when issues emerge across several stakeholder groups or across a variety of sub-categories within a stakeholder group. The analysis of access often draws out many sides of the same tale. It is not until these facets are brought together again under the heading of an issue that the full importance emerges. A third factor that is not completely elucidated by the theory of access is that of resource definition and scale. As Geores (2003) describes, the authoritative aspect of the forest (which Ribot and Peluso refer to as processes of access) is often controlled at a different scale than the allocative aspect (referred to as mechanisms of access), leading to both institutional dissonance and a myth of management. Again, further analysis is needed of the interplay between processes and mechanisms of access in relation to the scale of control.

The difficulties described above reveal the need for layers of analysis; interrogating access theory through emerging cross stakeholder issues, through the impacts of environmental events and through the interplay of these factors across temporal scales. This thesis has attempted to address these points through the structural reflections (such as this) and summaries (to follow) at the end of each chapter.

Summary and key points

As with previous chapters, overarching themes present themselves in relation to government and support organisations: the reliance on professionalisation of knowledge, lack of knowledge that hinders decision making at a local and national level and creates confusion as to responsibility. These themes present themselves, as described earlier, as institutional dissonance on both spatial and temporal scales. Additionally, this is manifested in the extent to which lack of familiarity and clear and unambiguous guidelines and procedures govern decision making and the lack of direct representation of harvesters' or industry opinions.

Perhaps the appropriate way to address those themes is through the key question of whether government organisations *should* be involved in encouraging the development of NTFPs at all. Commercial development of NTFPs for economic purposes is pointless unless it is in line with market demand. Given the volatility of NTFP markets, there is always the risk that

markets will fail, or will be oversupplied if encouragement singles out particular products. This is really an argument for tailored advice and support than against government involvement per se. Encouragement of non-commercial use also runs the risk of increasing pressure on resources, but again this is an argument for better management systems than against encouragement. As Section One describes, NTFP development has the potential to meet many rural development objectives at a time when the forest industry is suffering and so the encouragement of both commercial development and personal use is attractive.[64] In discussing the role of government and support organisations it is difficult not to become drawn into the notion that it is commercial activity and development that is normative, whereas the majority of gathering is for personal or extremely small scale use. It is always vital to consider how any increase in use, or change in the way that resources are managed will affect the quarter of the population who, as previously noted, are existing users.

The present situation where harvesting is largely controlled by markets and the personal concerns of the harvesters has its limitations. There are no checks to deal with the potential for market demands leading to damaging harvest levels and methods (as has been the case with moss and bulb harvests). Without considering whether there ought to be increases in harvesting levels, there is therefore a case for more active management of current use, for reasons of equability, efficiency and sustainability.

The state does not, however, have to be the channel for implementation. To quote Campbell:

> In practice, resources are often held in overlapping combinations of private, state, common pool resource management and open access regimes. Common property management systems for such resources therefore usually need to be based on recognition that the system needs

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[64] An example of this is the recent collapse in the market for moss due to competition from large scale, mechanised harvesting of sphagnum moss from New Zealand, which has made it very difficult for legitimate harvesters to compete with illegal harvesting in Scotland. A second example is the annual fluctuations in the international market for fungi. Seasonal changes in price occur as supply increases and decreases from countries with lower labour costs. Overlaid on these fluctuations is the impact of weather conditions on supply in Scotland and overseas, which can conspire to create either very high or very low prices. Of course market failure is equally a risk for NTFPs and timber, though a diversity of products lessens this risk.

> to accommodate the concerns of more than on participating interest group. (Campbell, 1990 in Arnold, 1998 p 40)

Government organisations do have the responsibility of a national overview, and at present this does not exist. They also have the responsibility to execute internationally agreed targets such as those contained in the Global Strategy for Plant Conservation. A controlling role is not necessary to achieve these responsibilities, but a collaborative role is.

The many different scales of operation in the forestry industry (from large-scale pulp wood production to smallholding) continue to lead to conflict. Industrial scale production of NTFPs is seen as desirable by the forestry industry, but the impact of this on existing activity is likely to be detrimental through the potential loss of harvesting sites. The scale of management operations is an issue for existing activity. NTFP resources go unmanaged in part because the units of area needed to manage NTFP resources are considerably smaller than those used in the management of timber. In order to protect the interests of existing harvesters, both government agencies and support organisations need to promote change in the scale of management and operations as well as in management objectives.

Using the management strategy developed in Figure 10, development follows a path of biometric data collection in collaboration with harvesters to work out sustainable yields and harvesting methods, alongside mechanisms for management: secure systems for accessing resources, the development of guidelines, woodland management systems and certification and accreditation. Activities are currently being undertaken partially fulfil the first stages in management planning; this gives an indication of the weakness of the information that agencies are currently working with. Whilst agencies theoretically have the power to influence the use of NTFPs to a considerable extent, without even the most basic information, influence is likely neither to be a priority or a possibility.

A repeated theme in this chapter is the separation of NTFP harvesters and policy making and the lack of direct representation of interests. Harvesters are such a large and diverse group with no representative body through which to make their interests known. This hinders not only the harvesters themselves,

but also contributes to the institutional dissonance that prevents government from making policy that will be effective – particularly in terms of implementation. Additionally, government has a *duty* to consult on policy and legislation, and without representative groups this task is next to impossible.

Representative groups often come together to deal with a threat, and this may be the only way in which harvesters are finally able to identify themselves as a group with common goals to secure access, and with this secure access the responsibility of managing resources. Given the quarter of the population who harvest NTFPs (on some level), this is potentially a large group, though at present unaware of their collective national importance or of the threats to their activities, livelihoods and lifestyles. Individually harvesters may not to see their actions as significant, but at a policy level the impact of their actions has to be seen cumulatively, and this is the challenge for policy makers who are also unaware of the scale or importance of current harvesting activity.

It need not be a government organisation that is responsible for implementing policy, and indeed, in the case of NTFPs it may be advantageous not to be. Non-government organisations often have a role complementary to that of government organisations: both feeding the concerns of harvesters to government agencies and helping to implement government policy through work that is publicly funded. The open, unregulated access to NTFPs that we find ourselves with at present is becoming destabilised by increasing personal and commercial use and policy interest. In order for NTFP interests to be recognised, and management mechanisms that work for all the interest groups and the natural environment to be developed, it is necessary not only to represent all interests but also find ways of self-government.

CONCLUSION

Over the course of the previous chapters, this thesis has explored current use of and attitudes to NTFPs in Scotland. It has done this through the perspectives of interested stakeholder groups: the harvesters, the buyers and processors, land managers and organisations who either use NTFPs directly or who influence the availability of resources and the ability of others to access them. Across these diverse perspectives, this thesis has set out to examine issues relating to the practice, politics and ecology of NTFP use.

This conclusion starts by returning to the four research questions presented in the introduction. Here these questions are used to provide section headings under which to direct final summaries and analysis drawing together key points from the preceding chapters.

1) How are domestically produced NTFPs used? What are the variables in the nature and extent of usage at different stages?

The first section primarily draws on Chapters Two and Three (Harvesters and Processors and Buyers), presenting evidence on the functional uses, livelihood purposes and lifestyle importance of NTFPs.

2) What social, cultural and ecological factors are perceived as delimiting use?

The second section draws from material across Chapters Two to Five to explore how access rights and their implementation, knowledge and representation of interests delimit NTFP involvement and harvesting.

3) Given the current system of ad hoc (or unregulated) use, is more active management of NTFP resources needed? What benefits could this provide (and to whom) beyond the scope of the current system?

Again, drawing on the previous four chapters, this question addresses concerns, both practical and ideological, about mechanisms for the management of NTFPs as a resource. In particular this section argues that ethical questions over benefits, values and rights be addressed, as well as issues surrounding

sustainability and resource use.

4) What form should the management of these resources take?

Finally, in pulling together the narratives of the different stakeholder groups presented in this thesis, this conclusion seeks to present an alternative model for the governance of NTFP resources.

SECTION 1: HOW ARE DOMESTICALLY PRODUCED NTFPS USED?

In exploring NTFP harvesting, Chapter Two uses both quantitative and qualitative data to illustrate the enormous diversity of people and practices that is present within this group. Indeed, this chapter demonstrated how harvesting NTFPs runs right through society, with two national surveys have showing that around a quarter of Scotland's population has harvested some kind of NTFP in the past five years (Snowley and Daly, 2005; TNS Global, 2003). Within this extensive activity there is great variety in the nature and extent of the use and of the skill and knowledge of the harvesters. From occasional berry picking or gathering of traditional seasonal decorations, to full time commercial harvesting of fungi or seed collecting, or highly skilled use of fungi for dyes.

Within this diversity of harvesting activity there are some groups with identifiable demographics; for instance a category of older, primarily female craft workers were identified by both the omnibus survey and the Wild Harvests study (Emery et al., 2006; TNS Global, 2003). There are also some groups with distinct social and cultural characteristics, such as the groups and individuals identified in Chapter Two who are attempting to live more closely in harmony with their local environment and so reduce their environmental impact. Generally, however, more clearly defined and segmented demographic groups of harvesters are not easily identifiable.

Categorising harvesters is additionally problematic as use often overlaps between types and levels of activity. Consequently, rather than trying to categorise the harvesters themselves it is more useful to consider harvesting activity and product use in terms of these variables. In doing this, the extent to which harvesting is embedded in the life of each gatherer emerges; something

that must be recognised in terms of any subsequent policy and management decisions. The resulting typology developed in Chapter Two, describes the factors that govern NTFP use (simplified in Figure 11 below).

Figure 11: Simplified typology of NTFP use.

Use Activity	Harvesting Activity
1) Functional use (to which products are put)	1) Characteristics of harvest (what is gathered)
2) Livelihood purpose (which the products fulfil)	2) Methods of harvest (how it is gathered)
3) Lifestyle function (cultural importance of the products)	3) Spatial and temporal factors (When and where gathering happens)

In this typology of NTFP use, functional, livelihood and cultural categories of use are qualified by categories of harvesting activity. The species, parts, methods used and the quantity harvested, together with the spatial and temporal limits of the harvest – including regularity and duration, seasonality and the geographical scale of harvesting – together give a picture of the nature and extent of the harvest. Placing harvesters within this typology also begins to indicate the level of skill and knowledge of the harvester, the amount of time they devote to gathering and the longitudinal extent of harvesting and use.

Functional uses

The functional uses of Scottish NTFPs are very varied, although foods and beverages (berries, mushrooms and herbs), closely followed by craft uses (foliage, branches and dyes materials etc.), are most common. Horticultural uses of NTFPs are also common, including: mosses, bulbs and native tree and plant seed, mulch, compost, fencing and path building materials. On a smaller scale, among those who use NTFPs most extensively, NTFP use extends into most areas of the household such as maintenance and supplies for internal and external use, such as using moss as well lining material. Given the historical traditions that do exist, the use of NTFPs for medicinal purposes, either on commercial or personal levels, is somewhat surprisingly much less apparent.

Further details of functional uses of NTFPs, which are, for analytical purposes fairly easily constructed into distinct types, are explored in Chapters Two and Three. More complex and subtle are the uses of NTFPs in terms of livelihood and lifestyle functions.

Livelihood purpose

The functional use of products is qualified by the livelihood purpose of harvesting and use. The extent to which gatherers rely on NTFPs to contribute to the household economy varies greatly, though the majority of use is probably personal and domestic. In the spectrum of livelihood uses, from domestic to commercial sale, there is also a great deal of overlap. The distinctions between domestic and commercial activity are also blurred by the way in which NTFPs are used to substitute for things that would otherwise need to be bought. Even activity that is totally domestic is in some sense an economic activity due to the in kind contribution to general household economies. Conversely, there are harvesters who could be viewed as commercial, in that they sell products, yet who do not necessarily see themselves as commercial. This is in part due to the scale of their activity, but also because their motivations are much wider than making a living.

An indication of the way that gathering is perceived in relation to other forms of work is found by the way in which the income earned is viewed. Many harvesters see this income as something that should be used for special purposes. Some use this income for charitable giving, others as savings for children and others as holiday money. Only when harvesters are absolutely dependant on the income for livelihood purposes do such earning go in to the general household pot rather than be used for special purposes (Dyke, 1997; Emery et al., 2006). While this special use of the income indicates that there is certainly an element of concealing untaxed income, the type of expenditure the income is used for indicates a more noble purpose.

While there are some larger NTFP businesses, many provide employment only on a part time or seasonal basis. The boundaries between what is considered work and what is done for enjoyment are blurred; harvesters often consider their activities to contain elements of both. What is most pertinent is that NTFP

businesses are able to contribute to household economies where employment options are limited and pluriactivity is a rationale choice.

Lifestyle

The description of livelihood purpose indicates the difficulty of separating livelihood and lifestyle factors, something also reflected in the difficulty in drawing boundaries between what is considered commercial and personal use. The enjoyment of harvesting and using products is often equally as important as the functional or livelihood purpose of their use. As a result, the cultural and lifestyle importance of NTFPs figures in many of the studies and interviews undertaken for this and other research.

In terms of health and well being it is also possible to see the difficulty in separating the functional classification of medicines and foods as another illustration of harvesters' use of products (and of harvesting as an activity) as both preventative and cure within a larger set of lifestyle choices. Some harvesters are able to contribute to the household economy through gathering at times when they are not able to take on other forms of work, and more importantly they are able to maintain their self confidence through feeling useful and productive.

Personal principles, particularly in terms of minimising environmental impact but also of environmental justice and redistribution of resources, are often important for harvesters. There are also strong cultural traditions, associated with some harvests and markets, which allow customary rights of access to be upheld and maintained. NTFP harvesting is an activity that is embedded in social identity, to a very great extent for some harvesters. The cultural or lifestyle use of NTFPs and the activity of gathering itself is therefore and important factor in considering the overall 'use' of NTFPs in Scotland.

SECTION 2: WHAT SOCIAL, CULTURAL AND ECOLOGICAL FACTORS ARE PERCEIVED AS DELIMITING USE?

Following Ribot and Peluso's theory of access has allowed key issues to emerge across all the chapters. In terms of rights based access the recurring

issues are those of legal pluralism and the mismatch between legal rights and regulation, customary rights and practice, along with the ongoing difficulty of implementation. In terms of structural and relational mechanisms of access the issues are those of knowledge – particularly the power that knowledge gives in access to resources and the powerlessness that lack of knowledge engenders (and the subsequent need for some sectors to professionalise knowledge in order to accept and use it).

Overlying both mechanisms and processes of access is a problem of representation. The NTFP industry and NTFP users are not easily defined groups and do not have representative bodies, their interests are therefore difficult to recognise and reflect. The following discussion brings together material from across each of the chapters in reviewing these issues.

Rights based access

Legal pluralism

Harvesting operates in a complex web of legal and customary rights that exist in parallel but make little reference to each other. A recent example this is the Land Reform (Scotland) Act (2003) which sought to clarify the position of commercial harvesting but avoided the issue of harvesting for personal use entirely. While this may have been with the intention of maintaining in the customary rights associated with gathering for personal use, the result is unclear and confusing.

Additionally, the strong distinction that is made between legal access rights for commercial harvesting and customary access rights for personal use is, as discussed earlier, in opposition to the way that harvesters define themselves and the practical manifestation of harvesting activity. In many cases there is no clear distinction between harvesting for personal use and harvesting for commercial purposes. The same is true of legislation regulating NTFP businesses, where the intention of the legislation is to regulate much more formal businesses, which conflicts with the sometimes very marginal (in conventional economic terms if not necessarily socially or culturally marginal) nature of the activity.

The relationship between legal rights, customary rights and sanctioned access is in practice quite fluid. There is very little public awareness of legal rights, and things that are in fact customary rights are often interpreted as legal rights and vice versa. The mix of legal, customary and sanctioned rights is un-transparent, poorly understood and inadequate to the complexity of harvesting practices.

While legal rights are often misunderstood and badly framed, in practical terms customary rights are often eroded and truncated. Individual landowners often express the sentiment that they are happy for local people to gather products for their own use, as they have done traditionally, but that they do object to what they see as the appropriation of resources by non-local, commercial harvesters. Although this gives the appearance of customary rights, available to a specific group of people, there is no provision for management. This is reflected in the theoretical separation of rights to the use of the resource (allocative), and to manage the resource itself (authoritative rights) (Giddens, 1984; McKean and Ostrom, 1995). This separation is found in rights to access land held publicly by the Forestry Commission, where personal use of products is accepted as customary use despite its factual forbiddance through the Commission's byelaws. This sanctioning of customary practice makes no provision for management. The result is that customary rights have become eroded, so that while access is sanctioned by landowners, access rights have become truncated and contain very little element of management responsibility for the resources used.

The truncation of customary rights to exclude input to management decisions is a major barrier to the sustainable use of NTFPs, and also to increased commercial use. While to a certain extent it is possible for use to continue to grow, there will come a point when landowners' management practices conflict with required NTFP yields, existing harvesting practices become damaging, or where it becomes uneconomic to harvest in larger quantities without interventions that could only be made with the knowledge and agreement of the landowner.

In practice the level of permission required for harvesting increases with the scale, degree of commerciality and distance a harvester travels to the site. Without authoritative rights, management of the environment is only possible in cooperation with other groups. Hence, a system of governance is needed that opens communication between groups, recognises customary rights and enables ongoing negotiation to accommodate changes in levels of use and in other factors.

Implementation

The attempt to construct a strong distinction between commercial and non-commercial harvesting creates great difficulties in the implementation of law. Not only must the product be proved to have been removed from the property of a particular landowner, but commercial intent must also be proved. These difficulties mean that, in the main, the legislation acts as a threat that is rarely carried out. In the case of the Land Reform Act, the lack of any system for implementing a major change in the law – excluding commercial harvesting from the right of access – is a threat to the industry. If the actual laws that do exist are eroded then so is the system that ensures customary rights, not least in terms of the attitudes of landowners to all activity taking place on their land, and so lack of implementation is also an issue for customary rights. The importance of social sanction in ensuring that rights are adhered to is often cited as a key feature of customary rights over common practice (Goodman, 2002). While misuse of customary rights may bring some local sanction, this is of little deterrent to non-local harvesters. This situation where a somewhat tangled set of legal, customary and sanctioned rights exist without coherent systems for implementation gives rise to a myth of management – in theory there are controls on harvesting, but in practice there are none except those that harvesters impose on themselves.

The majority of trade in the NTFP sector takes place in the grey and black markets. Without the market advantages that certification of products or accreditation of harvesters might bring, or the favourable regulatory climates that exist elsewhere in Europe (particularly Finland and Estonia), the industry has little incentive to formalise its dealings. As a result of lack of recording, the

contribution of NTFPs to the economy is a great deal harder to trace and also harder to identify opportunities where development could be encouraged.

The regulation of NTFP use is often difficult for agencies to address because it does not fall neatly into the role of a particular department. Businesses report that agencies would often refuse permission to harvest a product rather than risk creating a precedent for use. Therefore, it is necessary for businesses to deal with government agencies at policy or organisational level when seeking permission for new activity (Hardie, 2005; Irving, 2005). While this is may be an effective strategy, it is not a particularly efficient one. Better channels for communication with operational level staff are needed, as are better vertical linkages within agencies.

Structural and relational mechanisms of access

Knowledge and lack of knowledge

Knowledge, and the importance of different types of knowledge, is perhaps the main factor in the use of NTFPs by different groups. Harvesters value the specialist knowledge that distinguishes them and is needed for gathering. This knowledge allows them access to their local environment in a privileged way that is not open to all. NTFPs are valued as gifts because take on and embody this special knowledge and the effort that has gone in to collecting and making them. As an indication of the increasing use of NTFPs, new traditions of use and management are also developing around products that were not used to a great extent in the past. Fungi, in particular, have no great tradition of use in Scotland but are now have widespread commercial and domestic culinary use. Additionally, in the past twenty to thirty years a network has developed of craft workers who use fungi for dyeing. With experience developed through sharing knowledge, it is now possible to produce almost the full spectrum of colours from fungi dyes. This type of new expertise in use and management is termed 'new expert knowledge'.

Frequently, this knowledge overrides any legal or customary right in the ability to access resources. At present, while individual harvesters are aware of the ability that this knowledge provides to access and use resources, this is unformalised

and there is little awareness of the power that this gives collectively. A collective voice for harvesters would go some way to redress the legal power balance with land ownership.

As buyers and processors become increasingly commercial they tend to become one step removed from the practice of harvesting and become characterised by market knowledge. As a result, individuals who do not necessarily have a great deal of harvesting knowledge are therefore often involved in wholesaling. Buyers and wholesalers are therefore in a privileged position as middlemen when dealing with landowners, and again, their market knowledge overrides the possession of resources in their ability to use them.

In turn, land managers and organisations tend to be characterised by lack of knowledge. These two groups are familiar with having to rely on professional advice, but at present there is little biometric data to provide the kind of assurance that these groups expect. There is equally little effort to draw together the information needs that these groups have and the data that is available in the form of harvesters' knowledge. Without knowledge of the potential for NTFPs this situation is likely to continue. Any future demand for professionalised NTFP knowledge does, however, bring issues for harvesters and buyers. The power that they currently hold with harvesting and market knowledge is at risk if it is transferred to landowners and organisations.

Representation

The transfer of knowledge brings up another recurring theme, that of representation. Without representation, harvesters and buyers and processors have no ability to influence policy processes. More particularly, without representative groupings, harvesters and buyers and processors are often unaware that they form part of a group defined by their actions, of the effect of the cumulative actions of that group, or that upcoming changes in policy may impact on them individually.

The other stakeholder groups are also affected by the lack of any mechanism for communicating between groups. Landowners have no means of representing themselves and their perspectives to harvesters, and this

contributes further to the inability of landowners to gain from the resources in their possession. NGOs are also hampered in their attempts to disseminate information by lack of an easily defined and accessed audience. On an institutional level lack of representation furthers the dissonance whereby legislation and regulation bear no relation to practice,

Ecological factors

Using access to resources as a framework for analysis enables a full exploration of the social and cultural influences on NTFP use. Debate in the fields of anthropology and sociology as to the relative influence of the environment on societal development and vice versa has been ongoing over the past half century. Political ecology has been accused of favouring the political over the ecological (Vayda and Walters, 1999), but this study does not seek to explain environmental change, but rather the how and why of access to natural resources. The position, climate and geology of Scotland undoubtedly have a huge impact on the species make up and availability of resources, but in terms of NTFP use, particularly given the long history of a heavily managed environment, the extent and nature of exploitation is very much a function of political and cultural factors and changes.

Indeed research into NTFP use shows just how adaptable people are to the habitats that they find. In Finland, those interviewed were unruffled by the need to find new harvesting locations when their current spots were destroyed by timber harvesting, or when management changes meant that product that they had formerly harvested were no-longer available, they moved on to new sites or utilised different species. This does not entirely reflect the situation in Scotland, where harvesters do feel aggrieved by the loss of sites. According to Emery et al (2006), harvesters would also like to see changes in the species make up and management of forests to give a more semi-natural structure with more native trees. In Scotland, harvesting habits are to an extent tied by to stereotypes of what is available in certain habitats. For instance, it is commonly perceived that conifer plantations are barren and inhospitable, though in fact they are often very favourable habitats for certain commonly used fungi species. Perhaps the key reasons for the differences in the response of Finnish and Scottish gatherers are the scale in the availability of resources and the cultural history of

use and political attitudes to harvesting. Finland has a high percentage of forest cover coupled with a low population density. Scotland, in contrast, has a low percentage of forest cover, and in some areas, pressure on physically accessible resources. It should also be pointed out that while Scottish harvesters would like to see changes in the form and structure of forests, this does not prevent them from fulfilling their own gathering requirements with what is currently available. However, they believe that not only would there be better provision for gathering, the forest would also be more robust and better serve other purposes – providing habitats for wildlife for instance.

SECTION 3: IS MORE ACTIVE MANAGEMENT OF NTFP RESOURCES NEEDED?

Hearing the results of national surveys on NTFP harvesting (the Omnibus Survey and the National Opinion of Forestry Survey), which both show that around 25% of the Scottish population have engaged in some harvesting in the past few years, tends to elicit one of two reactions. The first reaction is amazement that harvesting figures could be so high in such an urbanised, post-industrial country. The second reaction is dismissive: 'Oh that's just people picking a few brambles'. Neither of these surveys give any indication of the extent or importance (either economic or cultural) of harvesting. There is undoubtedly a continuum in the livelihood purpose of harvesting, from occasional personal use to significant contribution to livelihood. A perhaps more significant question, and that addressed by the harvester workshops and interviews, is the contribution of harvesting to lifestyle. Regardless of the scale of harvesting, there is also a continuum of lifestyle importance. It is therefore possible that people picking a few brambles may have great cultural importance, illustrated by the occasional harvester referenced in Chapter Two:

> I would feel deprived; I would not have had a proper summer if I hadn't picked brambles. (HW1)

The way in which harvesting is measured, therefore, has a huge bearing on the significance it is accorded and hence the inclusion of measures of harvesting activity, use activity and lifestyle significance in the classification of NTFP use developed in Chapter Two and reviewed in Section One of this chapter.

Given this cultural importance and the current situation in terms of the confusion over rights based access, we have to question the relative efficiency of the system of ad hoc resource use. Current patterns of use have their efficiencies and inefficiencies. Resource use is relatively efficient, with flexible and knowledgeable gatherers and buyers able to circumvent and work around what regulation of access and financial gains that there is. However, this very much depends on the industry operating in the grey economy. In some respects the flexibility of this system also works well for non-commercial gatherers. In terms of available resources and market opportunities, however, a very small percentage of resources are currently used.

This system of ad hoc use, with no benefit to the landowner, does nothing to encourage land managers to improve yields. This system is also very vulnerable to change: change in priorities and objectives for land management, change in demand for products and change to law enforcement policies and practice. At present NTFP resources are particularly vulnerable as harvests (particularly commercial harvests) increase, as the legal rights that govern commercial harvesting go without systems for implementation and as the customary rights that govern harvesting for personal use remain informal. While the majority of harvesters are responsible, the species harvested are themselves particularly vulnerable if harvesting increases without formal guidelines on harvesting methods or incentive for implementation.

At present, those who hold the knowledge on NTFPs have no say in their management. Harvesters are very limited in their ability to improve yields, are often unaware of forthcoming management activities and are unable to prevent damage to or the loss of habitats. As suggested earlier, the voice of harvesters is stronger collectively than individually and their knowledge is needed to protect and sustain the resource. Equally, the impact of harvesting activity is greater collectively than individually, and current systems have no scope to generate the collective knowledge required. Indeed, land managers have no information on which to base decisions. As it is easier to ignore the impacts of management operations on NTFPs than it would be to develop the necessary new procedures or seek out the opinion of harvesters this often leads to avoidance of the issue.

The current system of ad hoc use is not equitable to harvesters or landowners, and while it is in some ways efficient at current levels, it is not flexible enough to accommodate changes in the level of use or management practices. However, in the development of any alternative system of policy and management some of the benefits and practices of the current position are worth maintaining. The benefits that harvesting currently brings to the quality of life of harvesters and NTFP entrepreneurs, particularly impacts on health (mental and physical) and maintaining the viability and attractiveness of rural life, need to be taken into account. The highly positive effect that harvesting has on quality of life is a major motivation for harvesting, whether for personal use, purchase substitution or commercial purposes, and needs to be given greater credence at a policy level.[65] Regardless of whether the development of NTFPs should be formally encouraged, it is (without any particular indication that this is as a result of existing efforts) growing. Any attempts to encourage greater commercial utilisation must be balanced against the needs of current users and the impacts that harvesting has on their lives. Development of NTFP use must be responsible, not just for impacts on species and habitats, but also on the activities of existing harvesters.

SECTION 4: WHAT FORM SHOULD THE MANAGEMENT OF THESE RESOURCES TAKE?

Across various stakeholder groups this thesis has explored the current state of NTFP use in Scotland. In pulling together and reviewing the implications of this use, the previous section has already pointed towards the necessary follow on question: how *should* these resources be managed? The imperative in this question means that we are asking not only what changes might be made to current practices, but also according to what judgements and values would any changes be made. This is, therefore, not so much a question of how resources are managed on the ground, rather about the governance of resources. In particular, it is a question of how the governance of resources can be integrated into the very structure of the processes and mechanisms of management, on

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[65] This fits with increasing international pressure for governments to use of subjective measures of well and ill-being in policy analysis. This is based on the theory that well-being results in beneficial societal outcomes both for individuals and as a spill over to wider society (Diener, 2005; Diener and Seligman, 2004).

multiple levels, from policy, to local regulation, to practice. Having made the case for a more proactive approach to governance of NTFP resources, the idea of self-governance – bringing together all interests to cooperate in the management NTFP resources, an idea which was introduced in Chapter Five – is developed here, with brief details of priorities for action.

Guidelines for harvesting practice

As would be expected there are examples of both good and bad harvesting practice for each NTFP. Some bad practice is due to accidental damage by poorly prepared new harvesters, and some to lack of long term interest in productivity – such as increasing harvesting rates or mechanising harvesting without thought for the impact on the species or habitat. At the same time it is important to note that there are many examples of good practice, inspired and directed by the knowledge and cultural investment of the harvesters themselves. These instances of good practice, and the motivations that have produced them, can form the basis for the development of guidelines for harvesting practice.

The creation of guidelines requires the cooperation of many groups to develop workable, accurate and implementable solutions. There is limited formal data on what constitutes sustainable harvesting for most individual species and most product types. However, in the absence of biometric data there is expertise to be drawn on from harvesters, which has the advantage of being directly relevant to harvesting. Additionally, guidelines are best regulated through acceptance and internalisation by those involved. Guidelines are also an essential basis for many other actions as they would not only provide guidance to new harvesters (and land managers), but also provide a standard by which to measure harvesting practice. Further discussion on guidelines for good practice and the process by which these are made is given in Chapter Two, with reference to the Scottish Wild Mushroom Forum.

Accreditation and certification

The formalising of guidelines on what constitutes good practice and sustainable harvesting also requires a means of enforcement. An accreditation scheme for harvesters would establish a public standard of good harvesting practice, this

would then be enforced by consumer demand (communicated via buyers) and would be subject to peer monitoring by other harvesters. Accreditation has the advantage that it would be relatively easy set up and administer and have the potential to add value to products. Similar schemes have been developed in Finland, and work well as voluntary standards (discussed in detail in Chapter Two).

Ensuring that woodland management benefits NTFPs goes hand in hand with good harvesting practice. At present certification options under available schemes (such as the Soil Association's Woodmark Scheme) are not practicable, requiring separate certification for each species harvested at each site. The kind of detailed information needed on the impacts of harvesting is not available and the cost of administration, which would have to be borne by the landowner, would be difficult to recover. New methods of certification, using groupings of products as well as groups of landowners, are needed. Standards requiring the consideration of the impacts of forestry operations on NTFP species under the UK Woodland Assurance Standard would be more accessible and widely applied.

Subsidy

Without financial incentives forest managers are unlikely to engage with the management of NTFP species; at present there is no provision for management of these resources through grant aid. However, the purpose of grant aid is to support the public good and the development of NTFP resources – for function, livelihood and lifestyle purposes – would certainly be applicable. The Scottish Forestry Grant Scheme currently includes an element of support for recreational use. However, it is noticeable that a major part of the way in which we use forests recreationally (through NTFP harvesting for personal use), receives no recognition in the way of grant aid. Both public and private landowners therefore have no means of supporting harvesting.

A second possibility for influence over the way in which NTFPs are managed is through the requirement that woodlands in receipt of grant aid are managed in compliance with the criteria for forestry practices set out in the UK Forestry Standard. The inclusion of consideration of the impacts of forestry operations on

NTFP species in these standards would be a very effective way of introducing the consideration of NTFPs in the management of all grant aided or state owned forests.

Mechanisms for institutional development

A difficulty that arises in having suggested an institution for the self-governance of resources is in how such an institution would be developed. There are few existing institutions for gatherers (those that do exist tend to be craft groups or more scientific interest groups such as local fungus groups) and not all sectors are not represented. Therefore, forming a new institution may be seen as an inappropriate mechanism for a disparate and somewhat arbitrary grouping of individuals that has no history of cooperation. However, as explored in discussions on representation, it is only as a group that the cumulative impacts of harvesting are felt and realised, and only as a group that the knowledge of harvesters has real power to aid management.

As described in Chapter Five, the danger with any initiative taken by a government institution is that it would be seen as unwanted interference and an attempt to impose control, and would be likely to fail. Criticisms of participatory approaches to development centre on a perceived focus on process over appropriateness, a reliance on formal institutions of participation (organisations) over informal institutions, and on the use of participatory approaches as just another means of pursuing a particular development agenda (Cleaver, 2001). In advocating a participatory approach to NTFP self-governance it is valuable to address each of these points in turn. First, processes for the governance of NTFP resources need to be flexible enough to adapt to local circumstances. It is therefore essential that processes are developed with representation from local interests. Second, any system of self-governance would require a point of contact with government agencies in order to achieve the aim of greater representation in policy and management. However, there is also the need for a very pro-active approach, using existing organisations, but also seeking out the opinions and involvement of individuals, with these individuals acting as 'nodes', consulting more widely among their peers and reporting back. Finally, central to participatory approaches is the necessity to be transparent about the limits of participatory influence, and so this final point is a criticism of the misuse of

participatory approaches rather than the approach itself. Having said that, ambitions to go beyond what is being offered can lead to empowerment and a greater sense of ownership. One thing that these criticisms make clear is that this must be a system of *self*-governance and that there must be grass roots support.

Without any existing means of representation, the task of awareness raising and of gaining the validation of harvesters is enormous. During the process of establishing a new institution, the support of an NGO may provide a useful middle ground, with a complementary role to government agencies, but also providing a stable base with some credibility with the groups who need to be involved.

Therefore, an institution is needed which incorporates several elements: existing representative bodies, and representative bodies of other stakeholder groups such as landowners organisations; individuals representative of, if not representing, the interests of different forms of gathering, buying and processing activity; and government and NGO interests. This institution would need to operate on a national level, developing mechanisms that are flexible enough to be applied to specific local circumstances. Such an institution offers the chance of effective representation and a stronger collective voice for each stakeholder group and to develop workable solutions to management and use of resources.

SECTION 5: FINAL REFLECTIONS

This thesis is the product of a long held professional interest in wild harvesting, with many of the studies discussed within it having been carried out in a professional capacity – working with the stakeholder groups described at various levels and in various relationships. This professional experience has often placed me in the position of having to balance the demands of the organisations that have commissioned the work – who are often looking for ways to increase the commercial harvest of NTFPs, often on an industrial scale – with my increasing awareness and conviction of the values and strengths of the existing small scale and domestic activity. Proposing an institution for self-governance puts me in an interesting and slightly fluid position, given that at times I represent NGOs, at times formalised knowledge, and at times my

position as a harvester in my own right. In developing the individual chapters on the perspectives of different stakeholder groups, I hope this thesis has managed to reflect the plurality that is present in my own research, professional and personal activity.

There is a paradox in the structuring the thesis according to user groups, which are set up in order to be deconstructed, there are no neat, homogenous user groups, but there are views and behaviours that are shared by particular types of use even when a single user may fall into several of these groups. This paradox is shared with the use of the term NTFP – there are no clear boundaries around the use of woodland products, and no clear boundaries around what is timber and non-timber, but these terms continue to be used in forestry and in land use policy, therefore, as a goal of this thesis is to reflect on what form the management of these resources should take, it is useful to think in the terms that policy currently operates in whilst being aware of their limitations.

While remembering that the groups used to structure this thesis are not mutually exclusive, what woodlands are to different groups is defined by use - the landowner and manager an economic resource (timber) and a recreational resource. To the conservation organisation woodlands are a store of biodiversity and to the policy maker a potential economic resource and source of social cohesion and wellbeing. To the harvester woodlands are all of these things *and* the contents of their cupboards. Harvesters therefore have perhaps the most complex relationship with woodlands of all.

These conceptions of and relations to woodlands are key to the rights which those groups see themselves as having over woodlands or elements of woodlands. As the example of felled woodland above shows, woodlands are ephemeral. When we are talking of the majority of woodlands in Scotland, managed in coupes of single age and single species, the trees, rooted in place, dictate the timescale on which management operates while the rest of the flora and fauna shifts both temporally and spatially with the life stage of the trees and the season. At the same time, woodland that has been felled is still forest land to the land manager – just in a temporary state of treelessness. NTFPs operate

on multiple different timescales – though always in relation to the trees as a key part of the ecological system. This operation at multiple different temporal scale provides the first key challenge for managing NTFPs, but also an insight to the changing nature of gatherer's conceptions of their rights to these resources, which shift spatially as resources become available in different areas of a woodland and from species to species as these change in availability within an area. Rights to the use of these resources are therefore fluid, and there are inadequate mechanisms in place to cope with this.[66] Use of NTFPs also tends to work on different spatial scales than woodland management – often using small areas within several different woodlands, perhaps in several different ownerships for the harvest of a single product.

I have described a de facto commons of NTFP use, albeit one that is formally recognised as being truncated and lacking an authoritative (in this case management) element. Mckean (2005 p 37) makes a useful distinction in dividing rights into stocks and flows – and suggests that the most efficient common property systems offer 'the combination of individually parcelled rights to flow with shared rights to an intact stock'. Scottish harvesters present a somewhat confused picture as for some it is the whole woods and the land which they see as their own (stock and flow), though for most it is a usufruct right (flow) rather than outright ownership which harvesters see as their own. However, harvesters' conceptions of usufruct rights (rights to the use of the thing rather than to the thing itself) are strongly linked to responsibilities to care for the resources in use, not ownership, but a stake in the stock. A strength of the analytical framework used in this thesis is that by following Ribot and Peluso's focus on access and process, property is put in its place. This thesis is concerned with the *use* rather than the ownership of resources and therefore property, by traditional definitions, is almost irrelevant when it comes to how resources are used and who is able to use them. By De Janvry's (2001) definition of property rights, those rights that are widely recognised such as exclusion of others and alienation by selling are joined by rights of access (recently addressed in the Land Reform Act) and those which currently receive

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[66] The current case in England of Mrs Tee versus DEFRA is being argued under the right of user, and ancient English right which gives someone who can prove continuous and unchallenged use of a resource for more than 20 years, the continued right to its use. As NTFP use shifts from species to species and place to place this makes the right of user all the more difficult to establish.

little attention, appropriation of resources and provision of management. Rights of access, appropriation and provision of management are often held by others than who hold formal title to the land.

If policy maker's understandings of property need to shift, they should redress the balance in the relative authority accorded to legal and common rights and reflect the importance of processes and mechanisms of access in directing resource use. Policy and management which recognises only rights based access (and particularly legal rights) is both unhelpful and inequitable. A shift further in the direction that policy is already moving is needed. This is the age of participation, if participation in a very limited and strictly defined set of areas which are deemed to be the public interest. Forest design is one such area – where input is limited to visual impacts and recreational opportunity. In order to fully act on the responsibilities that they assert go along with harvesting activity, they need to be given the opportunity to engage with those who have the formal responsibility for woodland management. Policy makers also need to accept that gatherers have legitimate interests in the impacts of management activities on NTFP resources. Responsibility therefore also lies with land managers – the magnitude of the threat to resources from habitat destruction is greater than that from harvesting at current levels.

Perhaps the greatest weakness of using Ribot and Peluso's framework for analysis is that it does not adequately explore the relationship between rights based access and processes of access. Giddens theorises that rights to resources have two elements, allocative (material) and authoritative (power). Ribot and Peluso divide their framework for the analysis of access into two elements, rights based access and processes and mechanisms of access. In some ways these two elements equate to Giddens' allocative (rights based access) and authoritative (processes and mechanisms of access), but in practice presents a difficulty in that rights based access (both in terms of legal rights and customary rights) is split between these things because of the pressures that processes and mechanisms of access exert over legal and customary rights, and it is the influence that processes and mechanisms of access have over rights based access that is key to understanding.

It is this understanding of social processes that tells us about the place of wild harvesting in our society. Commons, like this one access based on knowledge, do not develop in isolation (The Ecologist, 1995), but are also in relation to wider society and social processes. That wild harvesting is so integrated into society, and hence that this commons is so integrated into society is interestingly at odds with the notion of a post industrialised economy divorced from the environment. Richard Mabey (2006) describes foraging as a metaphor for connectedness, but wild harvesting is more than a metaphor, it is a manifestation of connectedness as its importance in the livelihoods of the participants demonstrates.

The growth of NTFP use over recent years can be seen as the resurrection of a 'modern gatherer'. Such a perspective has parallels with on changes in hunter-gatherer theory which include an increased focus on the importance of gathering over the danger of hunting and the realisation that ancient hunter-gatherer societies may well have had more leisure time than we do today. These factors have combined to change views from a life that is 'nasty, brutish and short'[67] (Hobbes, 1651), and achieved a romantic new image as 'the original affluent societies' (Sahlins, 1968), a potentially attractive way to live. This image, in its dependence on the redefinition of affluence in terms of immediate rather than delayed returns, is appealing to those who value time over possessions.[68]

The appeal to our inner gatherers is strong and gathering for both personal use and commercial purposes has increased. Now the challenge is to live up to another element of the appeal of gathering, the potential for balance between resource availability and demand whilst maintaining individual and collective autonomy.

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[67] Hobbes wrote that life was nasty, brutish and short in the context of war and times of deep insecurity, but the quote has been used so frequently to refer to hunter-gatherer societies that the original context has been lost.

[68] This re-visioning of hunter-gatherer societies has great implications for the relative importance of hunting and gathering as gendered roles. See Appendix Eight for further discussion

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APPENDICIES

APPENDIX 1: ACRONYMS USED

COST	Co-operation in the field of Scientific and Technical Research
DEFRA	Department for Environment, Food and Rural Affairs
ICF	Institute of Chartered Foresters
I & M	Inventory and monitoring
METLA	Finnish Forest Research Institute
NGO	Non government organisation
NTFP	Non timber forest product
PAW	Partnership for Action Against Wildlife Crime
PNW	Pacific Northwest
SEERAD	Scottish Executive Environment and Rural Affairs Department
SFGS	Scottish Forestry Grant Scheme
SLF	Scottish Landowners Federation
SRPBA	Scottish Rural Property and Business Association
SNH	Scottish Natural Heritage

APPENDIX 2: STUDY REFERENCE NUMBERS

Finnish study

Table 20: Finnish study interviewees.

Interview Reference	Type of participant	Type of organisation (location)	Area of influence
Buyers/processors/wholesalers/retailers			
Finn 1	Proprietor	NTFP processor, retailer and support organisation. (Sienajoki, South West)	Regional
Finn 2	Proprietor	NTFP harvester, processor and retailer and support organisation. (Sienajoki, South West)	Local

Interview Reference	Type of participant	Type of organisation (location)	Area of influence
Finn 3	Proprietor	NTFP buyer and distributor. (Joensuu, South East)	Regional
Finn 4	Proprietor	NTFP processor. (Kainuu East)	Regional
Finn 5	General manager	NTFP processor and retailer. (Kainuu East)	Regional
Finn 6	General manager	NTFP processor. (Kainuu, East)	Regional
Support/research organisations			
Finn 7	Project leader	Research and support organisation. (Sienajoki, South West)	National
Finn 8	Researcher	Research and support organisation. (Sienajoki, South West)	National
Finn 9	Director	Support organisation, market development. (Suomussalmi, East)	National
Finn 10	Researcher	Forestry research agency. (Helsinki)	National
Finn 11	Senior adviser	Ministry of agriculture and forestry. (Helsinki)	National
Finn 12	Policy adviser	Ministry of agriculture and forestry. (Helsinki)	National
Finn 13	Project leader	Forest research agency. (Helsinki)	National
Finn 14	Project leader	University. (Helsinki)	National
Finn 15	Researcher	University. (Joensuu, South East)	Regional
Finn 16	Researchers x2	University. (Joensuu, South East)	National
Peripheral interests			
Finn 17	Local government officer	Local government. (Suomussalmi, East)	Local
Finn 18	Programme manager	International NGO. (Joensuu, South East)	International
Finn 19	Lawyer	Forestry and farming Union. (Helsinki)	National

Table 21: Workshop reference numbers

Ref. Number	Workshop
LW1	Future research needs
LW2	Marketing
LW3	Woodland management for non-timber forest products

Inventory study: Resource availability

Table 22: Woodlands surveyed

Woodland Surveyed	Type of Woodland and area surveyed	Community group objectives
Townhill Wood, Dunfermline, Fife.	Mixed woodland both coniferous and deciduous. 37.1 ha	High quality recreational and educational resource.
Finlets, Deeside, Grampian.	Native pinewood. 90ha	Conservation and habitat restoration. Revenue generating activity.
Borgie Forest, Sutherland.	End of rotation Sitka spruce plantation and newly planted mixed broadleaf and Sitka plantation. 123ha	Multiple objective forestry, revenue generation for local community.
Kirkton Wood, Wester Ross.	Single aged plantation of lodgepole pine and Sitka spruce. 92ha.	Recreational opportunity and revenue generation for local community
Minard Castle Wood, Argyll	Mature mixed broadleaf and coniferous woodland. 85 ha	Recreational opportunity and revenue generation for local community
Balloch Wood, Dumfries and Galloway.	Mature mixed broadleaf and coniferous woodland. 65 ha.	Recreational opportunity and revenue generation for local community

Harvester workshops: The values and importance of NTFPs.

Harvester workshops 1 and 2 (HW 1and 2).

Pacific Northwest study: Involving harvesters in inventory and monitoring.

Table 23: I & M study reference numbers

Interview reference	Case study participants
Moss Harvesting	
I&M 1	Harvest lease holder, harvester and data collector
I&M 2	Bryologist and project manager
I&M 3	Forest Service employee responsible for administering study
Matsutake Harvesting	
I&M 4	Harvester and project partner
I&M 5	Forest Service employee and project partner
Salal Harvesting	
I&M 6	Salal harvester and data collector
I&M 7	Extension project worker and project initiator
I&M 8	Extension project director

APPENDIX 3: SPECIES MENTIONED IN THE TEXT.

Common name	Latin name	Where
No common name	*Lactarius trivialis*	Finland
Acorns (Oak)	*Quercus* sp	Scotland
Alder	*Fraxinus sp*	PNW
Birch	*Betula pendula/pubescens*	Scotland
Blaeberry	*Vaccinium myrtillus*	Scotland
Brambles	*Rubus idaeus*	Scotland
Bracken	*Pteridium aquilinum*	Scotland
Candy cane	*Allotropa virgata*	PNW
Cep	*Boletus edulis*	Scotland
Chanterelle	*Cantharellus cibarius*	Scotland
Conkers (Sweet chestnut)	*Castanea sativa*	UK
False morel	*Gyromitra esculenta*	Finland
Goosegrass	*Galium aparine*	UK
Hazel	*Corylus avellana*	Scotland
Hedgehog fungus	*Hydnum repandum*	Scotland
Hemlock	*Tsuga hetrophylla*	PNW
Holly	*Ilex aquilifolium*	Scotland
Ivy	*Hedera helix*	Scotland
Lingonberry	*Vaccinium vitis-idaea*	Finland
Lodgepole pine	*Pinus contorta*	Scotland
Matsutake	*Tricholoma magnivlare*	PNW
Nettles	*Urtica dioica*	Scotland
Norway Spruce	*Picea abies*	Scotland
Pacific yew	*Taxus baccata*	PNW
Pigeon	*Columba palumbus*	Scotland
Pine (Scots pine)	*Pinus sylvestris*	Scotland
Pheasant	*Phasianus colchicus*	Scotland
Rabbit	*Oryctolagus cuniculus*	Scotland
Red deer	*Cervus elaphus*	Scotland
Rhododendron	*Rhododendron ponticum*	Scotland

Common name	Latin name	Where
Roe deer	*Capreolus capreolus*	Scotland
Rosehip	*Rosa canina*	Scotland
Rowanberry	*Sorbus acuparia*	Scotland
Salal	*Gaultheria shallon* persh.	PNW
Salmonberry	*Rubus spectabilis*	PNW
Sitka spruce	*Picaea sitchensis*	Scotland
Spanish bluebell	*Hyacinthoides hispanica*	Scotland
Sphagnum	*Sphagnum sp*	Scotland/NZ
Slippery Jack	*Sullius Luteus*	Scotland
Sloe	*Prunus spinosa*	Scotland
St John's wort	*Hypericum perforatum*	PNW
Sweet cicely	*Myrrhis odorata*	Scotland
Wild Hyacinth	*Hyacinthoides non scriptus*	Scotland
Willow	*Salix sp*	Scotland
Wood sorrel	*Oxalis acetosella*	Scotland

APPENDIX 4: REPORTS AND PUBLICATIONS

Dyke, A.J. (2002) "Development of Non-Timber Forest Products in Scotland: Learning From Finnish Experience." Scottish Forestry 56:3 p165-68.

Dyke, A.J. (2003) Non Timber Forest Product Inventory Method. Edinburgh: Reforesting Scotland pp 9.

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Martin, S., Emery, M. and Dyke A. J. (2006 (In press)) "Wild Harvests from Scottish Woodlands: An Exploration of the Health and Well-being of Benefits of Non-Timber Forest Product Collection and Use." Scottish Forestry.

APPENDIX 5 OMNIBUS SURVEY RESULTS

The Omnibus survey was based on a stratified sample of 944 adults in Scotland. The questions used in the survey were:

1a) During the last *five* years have you collected any tree or plant materials for example, mushrooms, berries, cones and moss, in or around forests and woodlands in Scotland?

1b) During the last *twelve* months have you picked any tree or plant materials for example, mushrooms, berries, cones and moss in or around forests and woodlands in Scotland?

2) Which, if any, of these did you collect on your visits?

- Mushrooms
- Berries
- Firewood
- Other tree materials (for example, leaves, cones, seeds, nuts, bark, small stems/branches)
- Other plants or plant materials (for example, flowers, herbs, mosses, ferns, lichen, seeds)

The results of the survey are shown in the following three tables.

Table 24: Q1a Whether collected any tree or plant materials in the last 5 years

		SEX		CHIEF SHOPPER				AGE						CLASS				AREA					WORKING STATUS		
		Male	Female	Male-Yes	Male-No	Female-Yes	Female-No	16-24	25-34	35-44	45-54	55-64	65+	AB	C1	C2	DE	West	East/South	North	Urban	Rural	Full time	Part time	Not working
Unweighted base	TOTAL 944	438	506	119	319	366	140	114	165	177	140	134	214	130	279	235	300	370	390	184	783	117	332	141	471
Weighted base	944	454	490	109	344	352	138	138	162	174	167	128	175	190	264	199	291	448	306	190	798	106	363	147	434
Yes	233	96	127	19	77	91	36	33	41	42	47	35	24	61	64	49	48	89	76	58	181	33	73	62	88
%	*24*	*21*	*26*	*18*	*22*	*26*	*26*	*24*	*25*	*24*	*28*	*27*	*14*	*32*	*24*	*25*	*17*	*20*	*25*	*31*	*23*	*31*	*20*	*42*	*20*
No	721	357	364	90	268	261	103	104	121	131	120	93	151	129	200	150	242	359	231	132	617	74	290	85	346
%	*76*	*79*	*74*	*82*	*78*	*74*	*74*	*76*	*75*	*76*	*72*	*73*	*86*	*68*	*76*	*75*	*83*	*80*	*75*	*69*	*77*	*69*	*80*	*58*	*80*

Table 25: Q1b. Picked any tree or plant materials in the last 12 months? (Base: all those who have collected in the last 5 years)

		SEX		CHIEF SHOPPER				AGE						CLASS				AREA					WORKING STATUS		
		Male	Female	Male-Yes	Male-No	Female-Yes	Female-No	16-24	25-34	35-44	45-54	55-64	65+	AB	C1	C2	DE	West	East/South	North	Urban	Rural	Full time	Part time	Not working
Unweighted base	TOTAL 214	88	126	20	68	91	35	25	43	45	36	35	30	40	67	56	51	68	93	53	172	34	64	56	94
Weighted base	223	96	127	19	77	91	36	33	41	42	47	35	24	61	64	49	48	89	76	58	181	33	73	62	88
Yes	181	79	102	13	65	80	23	28	35	37	40	25	16	46	53	41	40	71	66	44	145	29	59	48	74
%	*81*	*82*	*81*	*69*	*85*	*88*	*63*	*85*	*84*	*88*	*85*	*71*	*68*	*76*	*83*	*83*	*83*	*81*	*87*	*75*	*80*	*88*	*80*	*78*	*84*
No	39	17	22	6	11	10	12	5	5	5	7	10	7	12	11	9	8	17	9	13	33	4	14	12	13
%	*18*	*18*	*17*	*31*	*15*	*11*	*32*	*15*	*12*	*12*	*15*	*29*	*28*	*20*	*17*	*17*	*17*	*19*	*12*	*22*	*18*	*12*	*20*	*19*	*15*
Don't know	2	-	2	-	-	1	1	-	1	-	-	-	1	2	-	-	-	-	1	1	2	-	-	1	-
%	*1*	-	*2*	-	-	*1*	*4*	-	*4*	-	-	-	*4*	*4*	-	-	-	-	*1*	*3*	*1*	-	-	*2*	*1*

Table 26: Q2. Materials collected

		SEX		CHIEF SHOPPER				AGE						CLASS				AREA					WORKING STATUS		
		Male	Female	Male-Yes	Male-No	Female-Yes	Female-No	16-24	25-34	35-44	45-54	55-64	65+	AB	C1	C2	DE	West	East/South	North	Urban	Rural	Full time	Part time	Not working
Unweighted base	TOTAL 214	88	126	20	68	91	35	25	43	45	36	35	30	40	67	56	51	68	93	53	172	34	64	56	94
Weighted base	223	96	127	18	77	91	36	33	41	42	47	35	24	61	64	49	48	89	76	58	181	33	73	62	88
Mushrooms	35	25	10	6	20	8	1	9	3	6	6	3	8	3	11	10	11	15	14	7	23	10	9	11	15
%	*16*	*26*	*8*	*29*	*16*																				
Berries	120	57	63	11	47	49	14	14	15	17	33	23	18	40	37	23	20	49	40	32	95	20	45	25	50
%	*54*	*59*	*50*	*54*	*61*																				
Firewood	30	20	10	2	18	6	6	13	7	6	2	2	1	4	9	10	8	13	11	6	23	7	11	10	10
%	*14*	*21*	*8*	*12*	*23*																				
Other Tree materials	*119*	*38*	*80*	*5*	*33*	*53*	*27*	*15*	*28*	*34*	*17*	*16*	*9*	*31*	*37*	*22*	*29*	*43*	*44*	*31*	*101*	*13*	*32*	*41*	*45*
%	*53*	*40*	*63*	*27*	*43*																				
Other plant materials	*55*	*23*	*32*	*7*	*16*	*21*	*10*	*10*	*12*	*13*	*10*	*5*	*5*	*19*	*15*	*9*	*12*	*16*	*19*	*19*	*48*	*7*	*15*	*19*	*22*
%	*25*	*24*	*25*	*35*	*21*	*24*	*29*	*31*	*28*	*30*	*22*	*13*	*22*	*30*	*24*	*19*	*24*	*18*	*25*	*33*	*26*	*20*	*20*	*30*	*25*
Other	*4*	*1*	*2*	-	*1*	*1*	*1*	-	*1*	*2*	*1*	-	-	-	*2*	*1*	-	*2*	*1*	-	*1*	*2*	*2*	*1*	*1*
%	*2*	*1*	*2*	-	*2*	*1*		*4*	-	*1*	*6*	*2*	-	-	-	*4*	*3*	-	*3*	*2*	-	*7*	*3*	*2*	*1*

Example 1: Moss harvest monitoring, Hebo Ranger District.

Moss harvesting occurs in greater volumes in the Hebo Ranger District than any other area in the Siuslaw National Forest, with current permit limits set at 110,000lbs per annum, Forest Service staff estimate that around the same volume is also collected without permits. For this monitoring project a different form of tenure was used – Stewardship Contracts. Two Stewardship contracts of three years duration were let for moss and floral greens harvesting which allowed the contractor exclusive access in exchange for recording information about the harvest. Both contracts were let to the same harvester. Those involved in the study were the Special Forest Products Coordinator for Hebo Ranger District, a bryologist and the moss harvester. There was also some peripheral involvement from Forest Service science staff.

Project objectives

1)To gather data on the impacts of three different moss harvesting regimes on moss populations.
2)To gather information on the characteristics of re-growth

This data would then be used to develop regulation of harvesting in accordance with more scientifically determined levels and practices.

Design

Three monitoring projects took place, the first a re-growth study on vine maple stems harvested in 1994 on ten sites. The second study is a landscape level assessment on the impacts of different levels of harvest intensity, dividing the Area into three and using a different treatment in each. The three treatments used were:

- control – no harvesting,

- rules - according to Forest Service rules in that district. The Ranger District rules are as follows: no harvesting of ground mosses and from downed logs, no harvesting above 20 feet and harvesting of every alternate limb on shrubs and every alternate stem on trees, no harvesting within 200 feet of watercourses or water bodies. Within the rules area an additional restriction was imposed limiting harvest to 30lb/acre.
- no rules – no restrictions on harvesting.

As well as the harvester picking within those restrictions during the contract, 10 non permanent plots per acre focussing on riparian areas were surveyed prior to harvest, and will be surveyed again at five years post harvest.

Example 2: Matsutake harvest monitoring, Diamond Lake Ranger District

Matsutake (*Tricholoma magnivelare*) has been harvested in the Cascade Range for over twenty years as a commercial product. In the early 1990s there was an explosion of harvesting – both in terms of harvest levels, and numbers of harvesters involved, as several good years saw high prices being paid. The increase in matsutake harvesting also had the effect of drawing the attention of ecologists, concerned at what the effects of such high intensity harvesting might be. The main focus of the work has been long term monitoring of the sustainability of harvesting, and as other areas of investigation have occurred they have been included. Work has been funded as Forest Service budgets have allowed, and volunteer effort has made the continuation of the project possible when no funding has been available

This project is a long term collaboration between a matsutake harvester and the research coordinator for the Diamond Lake Ranger District, with some input from Forest Service scientists and academics.

Project objectives

To gather data in answer to the following questions

1) Evaluate the effects of several harvest techniques on short and long term matsutake production, both the number of sporocarps and biomass.
2) How much of the resource is consumed by mammals?
3) Evaluate variability of fruiting from year to year.
4) Can moisture availability affect matsutake mushroom fruiting?

Data gathered would then be used to share and publish findings in order to enable harvesters to manage the resource and control harvesting themselves.

Design

Research is focussed on shirros (patches) that fruit relatively reliably.
Initially biomass monitoring was the focus of the work, then a sustainability study was added, testing the impacts of various harvesting treatments:

- Control
- Best Management Practice (hand harvest)
- Shallow rake/replace litter
- Shallow rake/no litter replaced
- Deep rake (below mycelial layer)/replace litter
- Deep rake/no litter replaced
- Use harvest tool

Three shirros were harvested using each method, having been harvested with the minimum impact method during the first year.

Other studies testing the impacts of watering on fruiting production and on mammal use of matsutake was carried out in 1995. A watering system on a gravity feed was set up to deliver water at a rate of 1 inch/foot^2 to four shirros with a record of producing fruiting bodies, and 2 areas of candy cane (a parasite on matsutake mycelia, and therefore an indicator of its presence). The presence and size of fruiting bodies in these areas and control areas were recorded.

A study on the long-term sustainability of harvesting according to the best practice method has also been begun, with a total of 50 plots. Half of the plots are control, and the fruiting bodies counted and measured. In the other half of the plots the fruiting bodies are harvested according to the best practice method and also measured. This study will continue for ten years.

A further study on silvicultural treatments to enhance production had to be abandoned due to lack of funds.

Example 3: Commercial quality salal monitoring, Vancouver Island.

The salal monitoring project is at an early stage. Harvesters in northern Vancouver Island near Jordon River, and in southern Vancouver Island near Victoria are given handheld GPS sets in order that they can record the location of the sites where they harvest commercially. Researchers at Royal Roads University and the Canadian Forest Service will use this information to identify site characteristics for commercial quality salal. Harvesters to be involved in this study have been identified in cooperation with timber companies. Salal harvesting on private land in BC is either done under a permit system or on area based tenures.

Project objectives

Data will be collected in answer to the following questions:

1) How much commercial quality salal is available on Vancouver Island? And therefore what is the land worth?
2) What sort of land base is required to maintain a harvester for a given time period?
3) What site characteristics correlate with commercial quality salal?
4) Can timber management treatments be used to co manage salal production?

This data will then be used to develop methods to enhance the harvesters' ability to make a living at salal harvesting through:

1) the development of predictive ecosystem and suitability maps that will provide critical information for forest planners.
2) Prediction of the outcomes of management plans on salal harvesting capability and on the value of salal over a rotation.
3) Identification of co management opportunities for increasing both timber and salal values.

Design

This piece of research uses the experience of approximately eight harvesters in harvesting commercial quality salal to record where they harvest, and the quantity and dollar value of their harvest. GPS handsets are used to record this data.

Researchers from Royal Roads will then revisit harvested stands to record site characteristics. Data on site type – elevation, aspect, soil type, tree species make up, seral stage etc and management history will be collected and correlated to salal volume and quality.

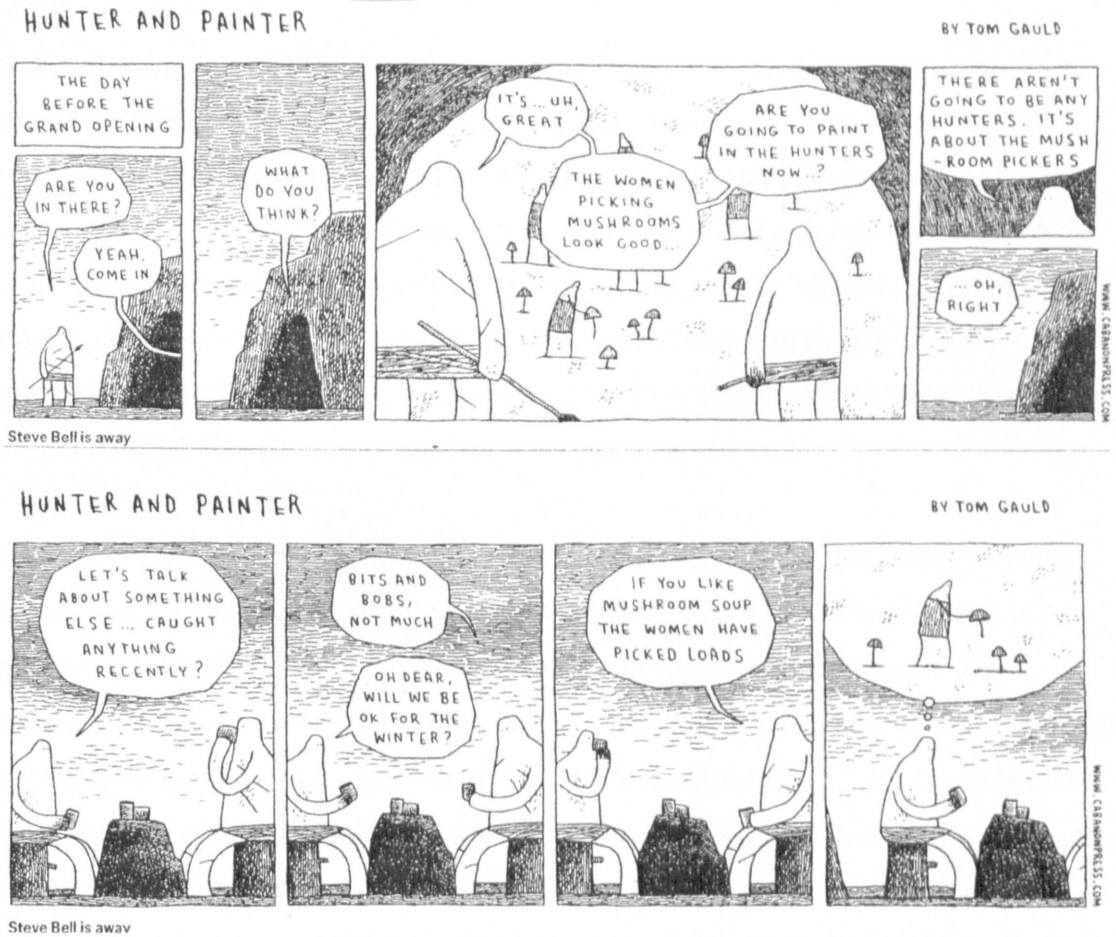
Table 27: Harvester population profiles

Project		Harvester population make up			
		Gender split	Racial Split	Local/ non local/seasonally migrant split	"Old" Harvester/ "New" harvester split
1) Moss	Harvester population	60% Male/ 40% Female	90%+ Hispanic/ 8% European Origin/2% other	90% Non local/ <10% local	>90% "New" harvester, <10% "Old" Harvester
	Involved in project	Male	European Origin	Local	"Old" Harvester
2) Salal	Harvester population	60% Male/ 40% Female	90% Asian/ 8% European Origin/ 2% other	?	>90% "New" Harvesters
	Involved in project	100% Male	100% Asian	100% locally settled	Well established "New" Harvesters
3) Matsutake	Harvester population	75 % Male/ 25 % Female	>70% Southeast Asian <10% Hispanic <20% European Origin.	Majority seasonally migrant	90% "New" Harvester 10% "Old" Harvester
	Involved in project	Male	European Origin	Not local to site	"Old" Harvester

APPENDIX 7: RECORDING OF NTFP USE: THE ROLE OF GENDER.

As Chapter Two on harvesters has discussed, there are gender differences in the way that NTFPs are utilised which impact on the importance that they are accorded at a policy level. This same situation has been true historically. The cartoon shown in Figure 12 illustrates an early case. Those activities represented in cave paintings represent the danger and adrenaline of the hunt as opposed to the day to day importance of gathering activities in survival. The two roles of hunter and gatherer are thought to be gender specific and so perhaps this gives us a clue as to the gender of the painters.

Figure 12: Cartoon series (Gauld, 2004)



Steve Bell is away

Historical records of use of woodlands in the UK are also highly coloured by the gender of the recorders. Estate records and court records tend to deal solely with timber and game – the concerns of the estate owner. Gathering activities by female tenants go unrecorded. Occasional references are made to bark for tanning and dye materials but the importance of these products together with foods and medicines for everyday life, are under-represented.

In the US too, the recording of uses of NTFPs by First Nations people by early anthropologists was restricted to uses by men. Kimmerer (2003 p 107) recalls her search for uses of moss by first Nations People and her confusion at being unable to find any records of use until she found a brief mention of moss being used by women as a sanitary product and as nappies for babies. Dried moss has a great capacity to absorb moisture and also has natural antiseptic properties making it ideal for these purposes. In only speaking to and recording men's uses of NTFPs this cultural knowledge was almost lost.

Gender is a major subject for ecocriticism, theorists such as Plumwood (1993) argue that the duality of gender and its relationship with the environment is a fundamentally alienating differentiation, with a master/subject relationship between men and women and man and people and the environment. Plumwood argues that we will not be able to go beyond this relationship until the dualism is exploded. Of course the relationship defined in these terms is oversimplistic, women do not universally identify with nature and it would also be simplistic to argue that women use NTFPs solely for unvalued but life enhancing domestic purposes while men use NTFPs for more tangibly beneficial livelihood maintenance. It is however interesting to note that all the wild food dealers that I have come across are male (with one exception, Mrs T's in the south of

England, a family business). Recreational use of NTFPs stretches across genders, and roles that have previously been female are becoming increasingly likely to be carried out by males, wild mushroom gathering is a case in point. Programmes such as Ray Mears' 'Bushcraft' and the proliferation of survival schools indicate the interest in tapping into our primal relationship with the land. These skills are presented in a relatively macho way – the key to surviving in extreme environments. The majority of us can not play at living off the land by hunting elk or trapping beaver, but we can go out into the woods and pick some mushrooms. The knowledge that is necessary to consume wild mushrooms safely could also be seen as adding a frission of danger to the activity. While the danger of consuming some fungi should not be underestimated, the majority would simply make an unpleasant meal and result in some gastric upset – the real skill lies in finding species that are good to eat and cooking them well.

It could be argued that multi-purpose forest management, working with the ecological characteristics of the landscape is a feminisation of forestry, whilst remaining a male dominated area of employment. The relationship between people and forests through community forestry is one area where there are more women as employees and volunteers, but remains a relatively low status area of forestry. The importance of forestry in providing for local economic and recreational needs is recognised but this is still seen as secondary to the role of forestry as a business producing timber. Perhaps this area of forestry will only gain status in the current climate of duality when men take it on to a greater extent.

The danger in attempting to draw our gender differences in the utilisation of NTFPs is that it is likely to perpetuate the importance which gathering activities are accorded at a policy level into the future. The image of 'nice ladies' decorating their homes with handcrafted goods will never sit well with male dominated policy makers. There is a paradox here too though – those 'nice ladies' are an easier group to access than men making their living from moss harvesting because they see their activities as having more legitimacy and certainly legality. The activities that are economically rewarding also tend to be illegal – going against the direction in which policy would like to take the harvesting of NTFPs.

Many options exist in permit schemes according to the spatial and temporal extent of the permission and the degree of exclusivity. There are several difficulties with implementing permit schemes, the first of which, the difficulty in categorising harvesters, has already been mentioned but will be developed further. Additionally this section will explore problems relating to setting the boundaries (spatially, temporally and in terms of the quantity of allowable harvest), equability in accessing resources and in balancing the burden of administering permit schemes against effectiveness in protecting property and the environment.

Competition between harvesters

The structure of permit schemes influences the extent to which non-commercial harvesters are affected. Perhaps the greatest impact could come from permit schemes granting exclusive access to commercial harvesters, which would require the permit holder to police others from their concession. Non-commercial harvesters could then find themselves excluded from land that they had formerly harvested. Even in less extreme cases, the additional effort and cost of obtaining a harvesting permit would doubtless disincline commercial harvesters from tolerating competition from non-commercial harvesters.

Permit schemes that allow multiple harvesters access to the same land also face competition between commercial harvesters. The boundaries of each permit – in terms of the area, the time period and the quantity of product allowed – must all therefore work together to ensure that there is sufficient resource available to prevent harvesters from being in constant competition, and therefore increasing the likelihood of over harvesting.

Setting boundaries

Permits would need to define the geographical area, the time period and the quantity of harvesting. For most products these limits would need to be flexible to allow for seasonal fluctuations in the availability of the product. Along with the boundaries setting out allowable harvesting, fees for permits would need to be set – and in order to do that a decision would have to be made about the

balance between permitting to enforce sustainability standards and permitting for profit. Permits aimed at generating profit for the landowner would simply not be viable for some products – where the product is of such low value in relation to the labour required that additional costs would not make the harvest worthwhile.

Indeed, the margins on products that are harvested at a small scale for craftwork may be so low that harvesters who are unwilling to pay an extra fee for access and are also unwilling to break the law would be forced out (Emery et al., 2006). Policing the use to which harvests are put would in most cases not be feasible. Permits should therefore only be used for harvesters who will be harvesting over and above a minimum threshold per season, something which would have to be enforced through buyers.

Equability

Many of the difficulties described above in terms of competition between harvesters and setting boundaries stem from lack of equability. In addition to these things, permit schemes for commercial harvesting may force out non-commercial harvesters and those whose produce is not large scale enough to justify the purchase is not large scale enough to justify the purchase of a permit. Offering exclusive harvesting rights often requires the harvester to put up a considerable proportion of the likely proceeds to by a concession, which limits who is able to buy a permit.

Administration

In order for the administration of permits to be worthwhile the benefits need to outweigh the cost of administration. Benefit can be assessed in terms of the harvester, landlord and government agency:

- The primary potential benefit to the harvester is, as discussed, assured access. Sustainable harvesting methods would also safeguard the long-term availability of the resource. Additionally, if the permit scheme is used in conjunction with certification, there might also be some market advantage for the harvester being able to show the sustainable origins of the product.

- Benefits to the landowner include being able to ensure sustainable harvesting on their land and also the potential to generate some revenue from the sale of permits.
- The benefit of permitting to agencies is also in generating income from state land and control of access. Contributing to meeting sustainability targets and also the opportunity to monitor harvests – both to assess the availability and value of the resource and also to develop data which is currently lacking for most species (through I &M schemes) on the impacts of harvesting.

Perhaps the largest question of all is how and who would administer the permit schemes? It seems unlikely that private or state landowners would be willing to engage in permitting unless costs were covered or exceeded by the revenue generated, or unless the certification of their woodlands depended on it. Meanwhile, if agencies are going to benefit from data collected it would be reasonable to expect them to share the costs.

Effectiveness

Permit schemes are designed to protect the property of the landowner and to protect the resources themselves. If a scheme is inequitable or impossible to administer non compliance is almost inevitable, and it will not serve its purpose. In the case of moss harvesting in Hebo forest district, Oregon used in the I&M case study, around 50% of harvesting takes place without a permit, mainly because margins are so small that many harvesters feel that they can not afford the extra expense, and are unlikely to get caught. As a result, 50% of the harvesting takes place without reference to the conditions set out by the Forest Service. Permits systems setting out conditions for harvesting take away the responsibility for sustainable practice from the harvester. By involving harvesters in setting conditions a greater proportion of the practice could be influenced. For standards to be adhered to, they must be reasonable, relevant and have legitimacy among harvesters. Harvesters must, therefore have a role in developing these standards.